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ILLUSTRATIONS.

The Municipal Theatre at Tiflis (Caucasus).—M. Victor Schroeter, Architect ..... *Double-Page Ink-Photo.*
Headquarters of the 18th Middlesex Volunteers, Harrow-road.—Mr. Halsey Ricardo, Architect ..... *Double-Page Ink-Photo.*
Sketches in Scotland.—By Mr. J. Watson ..... *Double-Page Ink-Photo.*
Detail of Doorway, Nos. 52-53, Parliament-street.—Mr. H. Huntly-Gordon, F.R.I.B.A., Architect ..... *Single-Page Tone-Block.*
Casket: Silver and Enamel.—By Nelson and Edith Dawson ..... *Single-Page Tone-Block.*

Blocks in Text.

Plan of Mosque of Omeiyades, Damascus ..... Page 422
Sketches of London Street Architecture, VIII.: Nos. 52-53, Parliament-street ..... Page 423

CONTENTS.

The Present Position of the London Water Question 417
Proposed Demolition of Bow Church 418
The London County Council Scandal 418
Notes 419
The Royal Institute of British Architects: Mosque of the Omeiyades, Damascus 421
Sketches of London Street Architecture.—VIII.: 52-53, Parliament-street 423
Beautiful Cities 433
The Architectural Association: "Lead, Copper, and Zinc" 424
The London County Council 426
The Tiflis Theatre 428
Headquarters for 18th Middlesex Volunteers 428
Sketches in Scotland: Dysart Tolbooth, Bittenweem Church, St. Monans, Details from Stirling 429
Details of Doorway, No. 52-53, Parliament-street 428
Casket: Silver and Enamel 428
Architectural Societies 428
Archæological Societies 429
Engineering Societies 429
Competitions 429
Student's Column: Rural Drainage 429
Obituary 430
General Building News 432
Sanitary and Engineering News 432
Electric Lighting News 432
Stained Glass and Decoration 432
Foreign 432
Miscellaneous 432
Capital and Labour 433
Legal 433
Meetings 435
Recent Patents 435
Some Recent Sales of Property 435
Prices Current of Materials 437
Tenders 437

The Present Position of the London Water Question.

A CRITICAL time in regard to the London Water Question has now been reached. The Cabinet Councils at which the Government prepare the work for the coming Session are being held, and in the next few weeks the form which legislation will take on this subject next spring will have to be determined.

It will be remembered that last Session the Government brought in a Bill to create a Water Trust; in other words, a public body which should represent the Metropolis and its suburbs, and which should have power gradually to absorb the water companies which are now in existence. The proposed legislation seemed to be of a half-hearted character, since while it was a recognition of the principle of public control of the water supply, it did not go to the full extent of stating the principles upon which the undertakings of the present companies should be obtained. It appears to be wholly impossible that the Government can go back upon this measure; once having admitted the principle of public control, it seems to be clear that this principle must be regarded as being now beyond argument. Sir John Lubbock has, it is true, recently in the columns of the *Times* and elsewhere endeavoured to show that it is undesirable that the London water supply should be in the control of a public body. But Sir John Lubbock appears to allow his fears to get the better of his judgment. For example, he states that the net profits of the water companies return a shade over 3 per cent. on thirty-seven millions. "This," he says, "would leave a margin of little more than ¼ per cent., which is surely not enough to indemnify the ratepayers for undertaking so gigantic a responsibility." But seeing that thirty-seven millions is nearly two millions above the actual value of the water companies' stock at the end of last year, this ¼ per cent. seems to be a satisfactory margin. Again, the principle of amortization is referred to, viz.: that it is the policy of Parliament that municipal loans should be repaid within sixty years; and, says Sir John Lubbock, to do this would mean an additional 1¾d. in the pound per annum in water rates. But though this may be a sound general principle, it would be obviously inequitable in the case of the purchase of the London water companies; a much longer time might well be given for the repayment of the sum borrowed for the purpose of paying off the companies. Again, Sir John Lubbock makes a kind of bogey of the possible necessity of obtaining in the future a supply of water from a distance. This possibility seems to be an argument not against, but for, placing the water supply of London in the hands of some public body. For it is difficult to see how the water companies could themselves carry out such a scheme. If it has to be undertaken it must be by a public body, and apparently Sir John Lubbock almost goes to the extent of compelling London to be without a new supply should necessity arise. Nor does he give us any estimate of the saving which must arise from a discontinuance of the diffused management which exists at present. Directors' fees, office rents, and so forth must be saved by the concentration of the water supply in a single body.

We refer to these criticisms of a well-known person, who is looked up to with deserved respect in London, because they seem to be dictated rather by fear than by sound reason. As we have said, however, the principle of public control and management was admitted by the Bill of last Session, and the chief question at present seems to be whether the body to control the supply shall be the London County Council or a special body created for this one purpose, as the London School Board was established to superintend the education of the Metropolis. Last week the London County Council reaffirmed their opinion that the control of the water supply within the area supplied by the existing water companies should be in their hands. There appears, therefore, only to be a choice between placing the management of the water supply in the hands of the Council or of a special body. The matter is one of so important and immense a nature that it would appear best to entrust it to a special body. London differs from an ordinary provincial town, however large. It is a province, so to say; its population is larger than that of Scotland. We can therefore see nothing unreasonable in having a separate civic department entrusted with the supply of water to London. Practically the actual work must be very largely in the hands of permanent officials, and the superintendence of these officials can be much better done by a special Board than by a Committee of the County Council, subject again to the control of the whole Council. There is nothing adverse to the principle of municipal government in such a separation of functions; on the contrary, the heaping of all affairs in a gigantic and unique city, such as London is, on one body appears to be carrying the municipal principle to an absurdity in one direction. This, then, for the moment, is the question of the hour in regard to this matter—what shall be the new controlling bdoy: not on what terms the undertakings shall be purchased, but who is to do it?

There follows upon the decision of this cardinal point an important but, in a sense, a subsidiary question, viz.: whether the Bill shall empower the new public authority at once to buy out the water companies as a whole—in other words, shall transfer the supply to their hands within a definite time—or shall allow it to be done in a piecemeal fashion, as by the Bill of last Session. On this point, however, there surely can be no doubt. If this great change has to be accomplished, time should not be lost over it, and upon the creation of a new body to take over the management of the water supply of London should follow the transfer of the existing undertakings. A great deal has been said and written from time to time as to the terms on which this transfer should take place; there ought to be no great difficulty in solving this problem. It is difficult to see why the companies should have more than the market price, plus, it may be, some small amount for compulsory sale. These three points really contain the fundamentals of the Bill on which the Cabinet are doubtless already engaged; the fewer details it contains, and the more it sticks to a few leading principles, the more satisfactory it will be.

In regard to that side of the question which relates to the quality of the water, some further discussion has taken place since we last referred to it, but it is rather of an acrimonious than of a scientific character. The circumstance that chemistry is powerless to define the real degree of purity of a potable water has led to numerous bacteriological examinations, the precise meaning of

which is even more obscure than the time-honoured chemical results. The chief aim of the bacteriologists at the present moment is to determine the relative number of bacteria per cubic centimètre of the water, and this enables them, by a mathematical process, to say whether a water is good or bad. If few bacteria are found, the water is said to be excellent; and if many occur it is condemned, in degree. But we must frankly confess that the results arrived at by this process are not such as to inspire confidence in them. Thus, it comes out in the correspondence referred to that on the occasion of an examination of the Kent Company's water during January and February, 1895, Dr. Klein found an average of 4,223 bacteria per cubic centimètre, whilst Mr. Dibdin, the County Council's chemist, during that period discovered an average of only eighty-five bacteria in the same volume. The recent reports furnished by Mr. Dibdin and Dr. Klein to the London County Council are not more reassuring, as it is impossible that the results obtained by both these experimenters can be correct—that the figures given by both can represent the number of bacteria actually present in the waters examined.

We have no hesitation in saying that the chief bacteriological results, published in this latest report of the County Council upon the quality of London water, are of no value whatever. Dr. Klein, in correspondence to the daily press, gives details as to his mode of collecting the samples of water for examination, and this in itself is sufficiently condemnatory. Sterilised vessels were not employed for the purpose, but clean Winchester quart bottles, and Dr. Klein states that, in his experience, the latter are as good as the former. This, however, is contrary to the experience of other observers, and it may well be asked why the samples in such an important investigation were not obtained in the usual way. What was the object of departing from the recognised practice of all bacteriologists in every part of the world?

It is not a little remarkable that the scientists engaged in the preparation of this County Council report should have found far more bacteria than did the official analyst or the water companies' chemists. Like the chemical results given in the same document, they are eminently satisfactory to the Council. The discrepancy in the different results may in a manner be accounted for, at least to some extent. The water examined by Dr. Klein was collected from street hydrants, and this was done in order that the quality as delivered to the consumer might be tested; whereas the samples examined by the regular analysts are taken in the immediate neighbourhood of the filter-bed, in order to show that the filtration has been effective. We all know that bacteria multiply very rapidly even in pure water, and in the time that must elapse in running from the filter-bed through pipes to the street hydrants of London the water must get richer in the quantity of these organisms. The same sample of water examined immediately after filtration and found to contain, say, 100 bacteria per cubic centimètre would, if allowed to pass through pipes for a short time in the usual way, develop, say, a few thousands of bacteria in the same volume, and that without contamination from any source *en route*. Indeed the samples collected from either source must be examined with all possible speed, as the organisms are multiplying even at the moment of drawing the water.

We have always held, and these reports and this correspondence strengthen our view, that in the present state of knowledge, the microscopic examination of water is of next to no practical value. Where quality is judged from the number of bacteria found in a given volume of water, and we know well enough that this number must depend on the circumstance of collection, and the time that elapses between collection and examination, it is impossible to have confidence in results. Water collected at ten o'clock in the morning and found to possess, say, 100 bacteria per cubic centimètre (*i.e.*, very pure for potable water), may be examined the next day at the same hour and found to contain ten times the number, and that without the water having been contaminated in the meantime. Therefore, we say, the numerical test is of no value. For the bacteriological examination to be of use it is necessary for the experimentalist to be able to say definitely whether the organisms he sees are injurious to health or not, and to be able to discriminate between harmful and harmless bacteria; and, whatever may be possible by and by, that can only be done to a very limited extent at present. We are, therefore, entitled to the belief that the history of the water, and its actual effects on the human body, and in relation to the general health of the community, are of more practical value as determining quality than the scientific methods of examination as at present devised.

PROPOSED DEMOLITION OF BOW CHURCH.

THE views along the great thoroughfares of the east-end of London are not so lovely and so varied that one would naturally suppose the dwellers in those parts to be willing, and even anxious, to part with one of the most striking and picturesque features to be seen on any of them. Bow Church, it is true, cannot claim to have any exceptional architectural merit, and its historic interest seems no greater than that which attaches to almost any structure, some parts of which have stood for five centuries. But it has been a well-known landmark for so many generations, and its grey tower and ivy-covered walls, its churchyard trees and monuments, contrast so kindly with the sordid ugliness around, that one would suppose the dullest waggoner on the road, the man who would most immediately benefit in a practical way, would feel a sense of loss if it were removed.

Unfortunately, the building has fallen into a somewhat serious state of decay; the chancel roof is reported to be in a dangerous state, and the principal services have had to be suspended. Restoration by a local firm of architects, under the supervision of Sir Arthur Blomfield, is contemplated; but the occasion has been seized to suggest the entire demolition of the church, on the ground that it would be "a great metropolitan improvement." The affair does not seem to have gone very far as yet, but the churchwardens and overseers are reported to be "quite prepared to take steps to get the church removed if the assistance of the District Board and of the County Council could be obtained;" and at a vestry meeting the other day a member remarked that such a movement would not be unpopular in Bow, and steps were being taken in the matter. Why the movement should be popular in Bow, or with whom, except the shopkeepers facing the church, who might get an advantage from wider footways and more room in the road for carts to stand in, is not very clear; but it must be acknowledged that the heavy traffic, which seems to be considerable in both directions, would at least be conveniented in being saved the turn round the churchyard by roads which, though apparently wide enough at present, are none too much so, and may easily prove too narrow in the near future. If the architectural interest of the building were more conspicuous there would be a very strong case for its preservation; as the matter stands its age, its picturesque and striking effect, and the sentiment of those to whom it is a familiar object, are what must be pleaded; they are sufficient to justify some effort being made in its favour.

The church was originally erected as a chapel-of-ease to Stepney, in the fourteenth century, and the decayed stonework of the chancel walls, now patched with brick, may safely be ascribed to that period, though the insertion of modern windows leaves but little detail to guide one. The lower part of the tower, with its doorway and west window, are either of the same date or a little later—probably the latter; but the details have been obliterated by the decay of the stone. If any other part of the superstructure is original, it can only be the core of the walls; the greater part of what is visible internally and externally must be due to a restoration, probably early in the last century, in which Gothic details have been badly imitated, and the rest is still more modern, and of no interest whatever.

There are several large marble eighteenth-century wall monuments in the church and one outside, between the windows of the south aisle; the latter is especially good of its kind, and most of the others are well worth preserving merely as works of art. A marble font of Renaissance character in the south aisle is also a work of some merit; the old fifteenth-century one standing disused in the north aisle is not interesting.

One suggestion we should like to make, and that is that, if it is really necessary to remove the body of the church, means might be found to leave the tower standing, with refuges and a few trees to the east and west of it. It is the tower and the trees which, from the picturesque point of view, are most valuable; and the width of road which it would occupy could very well be spared.

THE LONDON COUNTY COUNCIL SCANDAL.

WE consider it premature to go into any detailed criticism of this affair, because the whole facts are not before the public; possibly the adjourned discussion at the County Council may throw some more light on the originating causes of the extraordinary action of the officials of the Works Committee. On the face of it, and in a broad sense, the influences which led to it seem obvious enough. The London County Council cannot be content with its proper function of performing the municipal work of London; there is a large

party in it which must needs be an engine of political and social reform; and one of their ambitions is to efface the middleman or contractor, who is supposed to grind the artisan, and to save money at the same time by dealing with the artisan directly. Hence the desire to pose as being their own contractors and at the same time the friends of the working man. In this connexion the angry temper displayed by Mr. Burns, the working-man's member, in the discussion at the last Council meeting, at the idea of any accusation being brought against the Works Committee and their methods, is exceedingly significant. When it was found that the Works Committee was not saving money in many instances, it was the interest of those who had pinned their faith on the system to mask the fact, and hence the curious manipulation of the accounts by the subordinate officials; but what we do not know yet is, who instigated them to this course? It is hardly likely to have been done on their own initiative. One fact however we can give, as showing how the policy of the Works Committee bore on their treatment of contractors. The tendering for work for Colney Hatch was advertised for publicly, and Messrs. Humphreys' tender for 18,812*l.* was published in our "Tenders" column on October 5, 1895. The firm were told, however, that they were out of it, as the Works Committee found they could do it for less, and estimated it at 17,500*l.* Thus the contractor, who had answered a public advertisement and gone to the usual trouble in making up an estimate, found himself unexpectedly pitted against the advertisers, who obviously used his estimate as a basis for setting up a cheaper one of their own. Having found, in the process of carrying out the work, that they were exceeding not only their own estimate but that of the contractor whom they had supplanted, they cooked the accounts in the manner described in the Sub-Committee's report, in order to keep up the credit of the Works Committee. It is a silly as well as a mean business, and now that it has been once exposed it is hardly possible that the game can ever be played again. But what it concerns the public to know, and the County Council to find out and disclose, is—who was at the bottom of it; and people will hardly be satisfied until they do know that.

NOTES.

The Design of Motor-Cars. If motor-cars are to supersede horse-traction, as to a great extent we believe they will before long, some attempt ought to be made to invent a suitable form for them. As it is we see in most of them just the same curious conservatism of form which characterised the first railway carriages. As the old first-class carriage was made to resemble as much as possible three mail-coaches stuck together, so the makers of motor-carriages seem to have no more original idea than to make them like horse-carriages with the horses taken out. We have received an illustrated circular showing an auto-motor barouche, with the high box-seat and sloping footboard which were contrived originally to give a driver control over the horses and a leverage for pulling against them, and represent a construction totally useless with a motor-carriage. There really might be a little more effort at originality in building vehicles for an entirely new method of locomotion.

Priced Bills of Quantities. An architect writes to us that an authoritative declaration is required on the following question:—"A contract for a building provides that the successful contractor shall deposit with the architect a priced copy of the bill of quantities, and that the architect shall measure up the variations and use the said bill in valuing them so far as it applies. The architect having completed such measurement and valuation and issued his final certificate, is he justified in complying with the demand of the employer to hand over to him the contractor's priced bill of quantities? or is such bill in the nature of a confidential document between contractor and architect, and deposited with the latter for a special purpose only?" It appears to us that there is hardly ground for any question on the point at all. The law has nothing to say to it one way or another; and common-sense and logic must surely rule that as the architect represents the building-owner, and is only acting for him, the priced bill of quantities belongs as much to the one as to the other.

The Cour des Comptes, Paris. The inquiry opened at the Prefecture of the Seine as to a proposed transference of the terminal station of the Orléans Railway to the site of the ruined Cour des Comptes on the Quai d'Orsay, has led to a great deal of conflict of opinion. Some witnesses maintain that it should only be allowed on condition that the walls of the old building are retained as part of the new station—a totally impracticable scheme; others wish the building swept away entirely; others declaim against this as an act of vandalism. The fact is that people are so tired of seeing the burnt-out building standing there for a quarter of a century, that many would welcome any rational pretext for getting rid of it; and probably the weight of opinion is in favour of having the terminal station there, but on condition that there should be an intermediate station on the Place St. Michel, which would be the more desirable as giving an opportunity for a convenient connexion at that point with the Sceaux Railway.

Long Distance Telephony. The opening meeting of the Institution of Electrical Engineers was very auspicious. The internal dissensions seem to be smoothed over, and the proposal of Sir Henry Mance for the next President has given universal satisfaction. The paper read by Mr. Gavey on the telephone trunk-line system of Great Britain was a very able one, and was most favourably received. The formidable difficulties in the way of working long telephone lines have been very successfully overcome by Mr. Preece and other officials of the Post Office, and there is no doubt that soon a considerable part of the business between great towns will be conducted by telephone. Mr. Gavey stated that the use of the trunk wires was advancing by leaps and bounds, and that the difficulties in "getting through" were due, not to any defects in the system, but only to the heavy demand. It was a very lucky thing for this country that the Post Office took over the trunk telephone wires, for it is mainly owing to the harmonious way in which the able officials of this department work together that England is so far ahead of other countries in long-distance telephony.

Wimbledon Fever Hospital Site. The Local Government Board inquiry a few days ago, on the question of the Wimbledon Corporation borrowing 10,000*l.* to build an Isolation Fever Hospital on a portion of the Cemetery, led to some rather conflicting evidence, but as far as we can judge the weight of it is against the selection of the site, which is near some good house property, and (from the patients' point of view) Dr. Priestley gave evidence that the noise of the trains, the site being near the railway, would be detrimental to the patients, though this was denied by Dr. Little, medical attendant at the hospital. Dr. Little also went beyond his medical *métier* and undertook to assert that the presence of the hospital would not depreciate the letting value of property near it. The evidence to the contrary, however, from those concerned in such property, seems decisive. Of course it is always difficult to find any spot for a fever hospital against which there will not be complaints raised; but as far as one can judge from the evidence (for we have not had an opportunity of examining the ground) the choice of the Wimbledon Council does not seem a fortunate one.

Parish of Hammersmith. The Tenth Annual Report of the Vestry of Hammersmith gives an account of the progress of municipal work in that Parish, mentioning among other matters a petition against a proposal of the London County Council to erect a mortuary in a situation in which the Vestry considered (and we think with reason) that it was out of place in consideration of the nature of the surrounding property. The matter was arranged by the proposal of the Vestry that the mortuary should be placed on a portion of some land in Fulham Palace-road which the Vestry had purchased for the erection of an electric light generating station; a proposal accepted by the County Council. There is also mention of a scheme for a County Court for Hammersmith, which however has been deferred till some memorial should be presented by the ratepayers calling for one. It appears, however, that there is likely to be a demand for one before long, owing to the increase in the population of the district, and to the fact that at present one portion of the Parish is situated in a different County Court District from the other.

St. George's, Hanover-square. The sensational accounts in the daily papers of the fire at this fashionable temple of Hymen were fortunately much exaggerated. Externally there is hardly any trace of fire at all. The interior woodwork of the tower has been burned, and the stone, we learn, has scaled here and there with the heat, but structurally the building appears to be uninjured.

Electrical Carriages. We have received illustrations and a description of the electrical phaetons, landaus, &c., made by "The Great Horseless Carriage Company." They are fitted with two 3-h.p. electric motors, with chain gearing, and thirty-two accumulators. Taking the efficiency of the accumulators to be 75 per cent., and the average efficiency of the gearing and motors to be 30 per cent., it will be seen that we can only utilise usefully about one-fifth of the energy put into the accumulators. An electric tram-car requires at least two 15-h.p.

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THE LONDON COUNTY COUNCIL SCANDAL.

WE consider it premature to go into any detailed criticism of this affair, because the whole facts are not before the public; possibly the adjourned discussion at the County Council may throw some more light on the originating causes of the extraordinary action of the officials of the Works Committee. On the face of it, and in a broad sense, the influences which led to it seem obvious enough. The London County Council cannot be content with its proper function of performing the municipal work of London; there is a large

party in it which must needs be an engine of political and social reform; and one of their ambitions is to efface the middleman or contractor, who is supposed to grind the artisan, and to save money at the same time by dealing with the artisan directly. Hence the desire to pose as being their own contractors and at the same time the friends of the working man. In this connexion the angry temper displayed by Mr. Burns, the working-man's member, in the discussion at the last Council meeting, at the idea of any accusation being brought against the Works Committee and their methods, is exceedingly significant. When it was found that the Works Committee was not saving money in many instances, it was the interest of those who had pinned their faith on the system to mask the fact, and hence the curious manipulation of the accounts by the subordinate officials; but what we do not know yet is, who instigated them to this course? It is hardly likely to have been done on their own initiative. One fact however we can give, as showing how the policy of the Works Committee bore on their treatment of contractors. The tendering for work for Colney Hatch was advertised for publicly, and Messrs. Humphreys' tender for 18,812*l.* was published in our "Tenders" column on October 5, 1895. The firm were told, however, that they were out of it, as the Works Committee found they could do it for less, and estimated it at 17,500*l.* Thus the contractor, who had answered a public advertisement and gone to the usual trouble in making up an estimate, found himself unexpectedly pitted against the advertisers, who obviously used his estimate as a basis for setting up a cheaper one of their own. Having found, in the process of carrying out the work, that they were exceeding not only their own estimate but that of the contractor whom they had supplanted, they cooked the accounts in the manner described in the Sub-Committee's report, in order to keep up the credit of the Works Committee. It is a silly as well as a mean business, and now that it has been once exposed it is hardly possible that the game can ever be played again. But what it concerns the public to know, and the County Council to find out and disclose, is—who was at the bottom of it; and people will hardly be satisfied until they do know that.

NOTES.

The Design of Motor-Cars. If motor-cars are to supersede horse-traction, as to a great extent we believe they will before long, some attempt ought to be made to invent a suitable form for them. As it is we see in most of them just the same curious conservatism of form which characterised the first railway carriages. As the old first-class carriage was made to resemble as much as possible three mail-coaches stuck together, so the makers of motor-carriages seem to have no more original idea than to make them like horse-carriages with the horses taken out. We have received an illustrated circular showing an auto-motor barouche, with the high box-seat and sloping footboard which were contrived originally to give a driver control over the horses and a leverage for pulling against them, and represent a construction totally useless with a motor-carriage. There really might be a little more effort at originality in building vehicles for an entirely new method of locomotion.

Priced Bills of Quantities. An architect writes to us that an authoritative declaration is required on the following question:—"A contract for a building provides that the successful contractor shall deposit with the architect a priced copy of the bill of quantities, and that the architect shall measure up the variations and use the said bill in valuing them so far as it applies. The architect having completed such measurement and valuation and issued his final certificate, is he justified in complying with the demand of the employer to hand over to him the contractor's priced bill of quantities? or is such bill in the nature of a confidential document between contractor and architect, and deposited with the latter for a special purpose only?" It appears to us that there is hardly ground for any question on the point at all. The law has nothing to say to it one way or another; and common-sense and logic must surely rule that as the architect represents the building-owner, and is only acting for him, the priced bill of quantities belongs as much to the one as to the other.

The Cour des Comptes, Paris. The inquiry opened at the Prefecture of the Seine as to a proposed transference of the terminal station of the Orléans Railway to the site of the ruined Cour des Comptes on the Quai d'Orsay, has led to a great deal of conflict of opinion. Some witnesses maintain that it should only be allowed on condition that the walls of the old building are retained as part of the new station—a totally impracticable scheme; others wish the building swept away entirely; others declaim against this as an act of vandalism. The fact is that people are so tired of seeing the burnt-out building standing there for a quarter of a century, that many would welcome any rational pretext for getting rid of it; and probably the weight of opinion is in favour of having the terminal station there, but on condition that there should be an intermediate station on the Place St. Michel, which would be the more desirable as giving an opportunity for a convenient connexion at that point with the Sceaux Railway.

Long Distance Telephony. The opening meeting of the Institution of Electrical Engineers was very auspicious. The internal dissensions seem to be smoothed over, and the proposal of Sir Henry Mance for the next President has given universal satisfaction. The paper read by Mr. Gavey on the telephone trunk-line system of Great Britain was a very able one, and was most favourably received. The formidable difficulties in the way of working long telephone lines have been very successfully overcome by Mr. Preece and other officials of the Post Office, and there is no doubt that soon a considerable part of the business between great towns will be conducted by telephone. Mr. Gavey stated that the use of the trunk wires was advancing by leaps and bounds, and that the difficulties in "getting through" were due, not to any defects in the system, but only to the heavy demand. It was a very lucky thing for this country that the Post Office took over the trunk telephone wires, for it is mainly owing to the harmonious way in which the able officials of this department work together that England is so far ahead of other countries in long-distance telephony.

Wimbledon Fever Hospital Site. The Local Government Board inquiry a few days ago, on the question of the Wimbledon Corporation borrowing 10,000*l.* to build an Isolation Fever Hospital on a portion of the Cemetery, led to some rather conflicting evidence, but as far as we can judge the weight of it is against the selection of the site, which is near some good house property, and (from the patients' point of view) Dr. Priestley gave evidence that the noise of the trains, the site being near the railway, would be detrimental to the patients, though this was denied by Dr. Little, medical attendant at the hospital. Dr. Little also went beyond his medical *métier* and undertook to assert that the presence of the hospital would not depreciate the letting value of property near it. The evidence to the contrary, however, from those concerned in such property, seems decisive. Of course it is always difficult to find any spot for a fever hospital against which there will not be complaints raised; but as far as one can judge from the evidence (for we have not had an opportunity of examining the ground) the choice of the Wimbledon Council does not seem a fortunate one.

Parish of Hammersmith. The Tenth Annual Report of the Vestry of Hammersmith gives an account of the progress of municipal work in that Parish, mentioning among other matters a petition against a proposal of the London County Council to erect a mortuary in a situation in which the Vestry considered (and we think with reason) that it was out of place in consideration of the nature of the surrounding property. The matter was arranged by the proposal of the Vestry that the mortuary should be placed on a portion of some land in Fulham Palace-road which the Vestry had purchased for the erection of an electric light generating station; a proposal accepted by the County Council. There is also mention of a scheme for a County Court for Hammersmith, which however has been deferred till some memorial should be presented by the ratepayers calling for one. It appears, however, that there is likely to be a demand for one before long, owing to the increase in the population of the district, and to the fact that at present one portion of the Parish is situated in a different County Court District from the other.

St. George's, Hanover-square. The sensational accounts in the daily papers of the fire at this fashionable temple of Hymen were fortunately much exaggerated. Externally there is hardly any trace of fire at all. The interior woodwork of the tower has been burned, and the stone, we learn, has scaled here and there with the heat, but structurally the building appears to be uninjured.

Electrical Carriages. We have received illustrations and a description of the electrical phætons, landaus, &c., made by "The Great Horseless Carriage Company." They are fitted with two 3-h.p. electric motors, with chain gearing, and thirty-two accumulators. Taking the efficiency of the accumulators to be 75 per cent., and the average efficiency of the gearing and motors to be 30 per cent., it will be seen that we can only utilise usefully about one-fifth of the energy put into the accumulators. An electric tram-car requires at least two 15-h.p.

motors, and they are often run at a far greater output, to the detriment of their armatures, which are notoriously short-lived. That a motor-car could run fifty miles a day, and only consume twenty-two units at 1½d. per unit, is possible when everything is favourable; but in practice a hill would severely test the armature, and use up several of the twenty-two units. The rough handling the heavy accumulators would be certain to get would soon break down any traction accumulator with which we are acquainted. We may add that these carriages certainly ought to have some kind of fender or "cow-catcher" in front of them if they are going to run at eight miles an hour in the City, as they must weigh nearly a ton, and no driver likes to press his brakes hard on rubber tyres.

The Carpenters' Company Schools. It is becoming the annual custom of the President of the Royal Institute of British Architects to inspect the Trades Training School, at Great Titchfield-street, belonging to the worshipful Company of Carpenters and other City Companies. Professor Aitchison therefore met the Committee and Secretary on Tuesday evening, and was conducted over the shops, which were in full working order. The joiners, masons, plumbers, and smiths are, perhaps, doing the pick of the work at these schools, and the examples of bossing and stereotomy are in some cases remarkable. Stone carving, but lately established, has attracted only ten students, but these have made a good beginning. The students show an improvement in design as compared with last year, but there is still room for greater success in this direction. After Professor Banister Fletcher, as Chairman, had read his report, Professor Aitchison, in an appreciative speech, congratulated the Companies on the marked success of the schools, and on the fact that there are now 285 students on the books, with an average weekly attendance of 400.

More Fish Markets for London. A correspondent, "J. R." writes:—"I find there is a company just started, with the large capital of 500,000*l.*, with the design of giving the Metropolis a more adequate fish supply. This seems a promising project; but, in order to carry it out, will it not be necessary to increase our market accommodation? In this vast city, with its five or six million inhabitants, we have only three fish markets, viz., Billingsgate, Shadwell, and Columbia. The latter one is supplied, I believe, by inland conveyance only. Is there not room for at least three more markets to be constructed, say, one at Rotherhithe, one at Lambeth, and one at, say, Pimlico, and situate on the riverside? The pressure at Billingsgate must be now very great, and must add greatly to the congestion of our central streets. The immense population in the districts I have named could well sustain the markets I have suggested. I believe it would prove a great boon to those crowded districts, and I cannot but think that they would prove a financial success."

Franklin's Printing Press. A correspondent of *Notes and Queries* says that in passing through Macklin-street, Drury-lane, a few days since, he saw a house which he "identified many years ago as Watts's printing office (formerly in Little Wild-court)" and intimates it may not remain much longer. Now, in his "Autobiography" Franklin says he worked "at Watts's, near Lincoln's Inn Fields," which is some little distance from Macklin-street, and Watts's printing-house is commonly believed to have been in either Wild-court (south side) or Little Wild-street, both of these being thoroughfares leading out of Great Wild-street into Sardinia-place, *olim* King's Head-yard. A tradition that Franklin worked at 74-5, Great Queen-street is very likely due to the fact that his press, before it went to the Franklin Museum, New York, had been preserved at Cox & Son's, afterwards Cox & Wyman's, to whom Messrs. Wyman & Sons, printers of the *Builder*, are successors. In 1838 the press had passed to Mr. Harrild, of Great Distaff-lane: see the *Athenæum*, March 24, 1838; a woodcut of it is in Leigh Hunt's "The Town." When he came to England as delegate from Pennsylvania, Franklin visited Watts's, and there saw the press he had used many years before as a journeyman printer, lodging, he tells us, in Duke (now Sardinia) street, "at an Italian warehouse opposite the Romish church."

The "Dutch Tenters," Spitalfields, and Homerton College. In the School Board for London's new schedule of sites proposed to be taken for providing additional school accommodation are included Homerton College, and an area of about 900 square yards now covered by nineteen houses in Palmer, Freeman, and Shepherd-streets, Spitalfields. The latter site is situated on the west side of Commercial-street, and on the north of Wentworth-street, within the area locally known as the "Dutch Tenters," which for two hundred years past has been the exclusive settlement of Jewish immigrants from Holland, and continues as a separate colony within the Jewish quarter of East London. "Dutch Tenters" can be most conveniently entered through the archway under the old Jewish meeting-place, White's-row, by one who goes down Widegate-street, out of Bishopsgate-street. In February, 1894, the Charity Commissioners drew up a scheme for removing the domicile of Homerton College to the buildings of Cavendish College, Cambridge, closed in 1892. The college and Congregational Board of Education at Homerton was founded about one hundred years ago. The buildings were erected in 1823-4, on a site of 1½ acres, after Samuel Robinson's designs. It was at first called the "King's Head Society," having been founded as the outcome of some meetings at the tavern so named in Sweeting's-alley, Cornhill. It migrated from Plasterers' Hall to Mile End-road, and thence, in 1769, to a house in High-street, Homerton, which the Society pulled down in 1823, taking the site for a garden and building a new college in the rear.

The New English Art-Club. The seventeenth exhibition of the New English Art Club, which opened on Monday at the Dudley Gallery, is not calculated to make converts. Their ablest member, Mr. Furse, does not exhibit. Mr. Legros, who exhibits a frame of fine studies of heads and figures, and two rather unnecessarily large landscape sketches (which, No. 37 especially, are among the best things in the room) on the other hand is not a member, and so cannot be reckoned to the credit of the club. Some of the small landscape sketches exhibited are admirable as first sketches, such as Mr. Brabazon's "Lake of Lucerne" (5) and Mr. Hall's "Wensley Dale" (11), the latter an excellent reminiscence of colour in a landscape; but these and some others like them are rather artists' memoranda for pictures than things to exhibit. Taken generally, it is a room full of unfinished pictures. Mr. Fred. Brown shows fine effects of light and colour in his landscape sketches, "An Autumn Afternoon" (33) and "A Misty Morning on the Tees" (41)—the latter gives an exceedingly real and vivid effect of sunlight; and in "The Sleeping City" (80) Miss Mary Hogarth (not a member) has given an impressive picture of part of Venice empty and silent in early morning. In "Children in the Barn" (61) Mr. W. W. Russell contrives to make a pleasing and characteristic picture out of the incident of the children playing in the straw in a barn, with the light seen through the cracks in the old door at the back; and Mr. J. Buxton Knight's "Tidal Breeze" (61) is noteworthy for a sky with a real breeze in it. Mr. Anning Bell's "Battledore and Shuttlecock" (60) may have more in it than is apparent, but in the light in which it is hung one can hardly make it out. Other works that afford some pleasure are Mr. Fry's "Valley of the Seine" (49), Mr. Forster's "Straight Street, Damascus" (45) in which the figures in red burnouses in the foreground tell admirably; Mr. Lindner's "Christ Church Harbour" (44); and Mr. Hartrick's "The Village Chestnut" (63). Some of the works exhibited, such as "Knocked out" (25), a prize-ring scene, and the portrait No. 50, can only be called brutal, and would be a disgrace to any exhibition.

The Grafton Gallery. The Grafton Gallery offers at present a double exhibition; that of the "Society of Portrait Painters" and that of the "Society of Miniaturists," the latter being the first exhibition of that body. The greatest attraction of the collection of the Society of Portrait Painters consists really in the pictures by Millais which are lent, especially his wonderful portrait of Lord Shaftesbury, for which alone the gallery is worth a visit. The works of members include a good many not very interesting portraits, with some of rather striking merit and originality. Among these may be mentioned Mr. Jacomb Hood's "Mrs. Lee Matthews" (1) a fine piece of colour, and his portrait group after Reynolds (as one might call it) of Mrs. Fox and her children (57); Mr. Lorimer's "Earl of Lindsay" (73); Mr. Hudson's "Study in Profile" (78), a bust portrait of a woman, treated in a large and ample manner which reminds one of the Renaissance; Mr. Lavery's "Thalia" (81), and Mr. Guthrie's "Master Roy Garroway" (83), a masterly portrait of a child, painted with remarkable breadth and freedom of style. Among the works of foreign contributors (not members) M. Courtois' "Girl in Red" (122) is very charming, and M. Helleu's pastel portrait of a girl (148) is one of the cleverest things in the gallery. The exhibition of the Society of Miniaturists in the back gallery seems to show that there are a considerable number of artists (many of them ladies) whose names are unfamiliar to us, who can do successful work in this pretty

form of art, in which the attainment of a certain level of excellence is perhaps not very difficult.

M. Edouard Corroyer.

THE Académie des Beaux-Arts has elected M. Ed. Corroyer as "Académicien libre," in the place of the late M. Barbet de Jouy. M. Corroyer was born at Amiens in 1835, and is a pupil of Viollet-le-Duc. He has devoted his attention especially to the restoration of ancient monuments of religious architecture. After acting as Diocesan architect at Soissons, he was for fifteen years architect in charge of Mont St. Michel, which became the principal object of his studies; from which position he was removed, as recorded at the time in our columns, at the instance of the anti-ecclesiological party, who thought that he was carrying restoration further than their sympathies or convictions would allow. In France M. Corroyer was considered to have been most unworthily treated; in England we might possibly have thought that the conclusions of the authorities were right, though their reasons were probably wrong. M. Corroyer is the author of some interesting studies of ancient buildings—St. Bruno at Grenoble for instance; the "Calvaires" of Brittany, and the apse of the Cathedral of Dol; of a learned work on Mont Saint Michel; of a history of Roman architecture and a history of Gothic architecture; the latter a very clever and original work, but embodying views on some points which will hardly be accepted by English students of architecture.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

MOSQUE OF THE OMEIYADES, DAMASCUS.

AN ordinary fortnightly meeting of this Institute was held on Monday at No. 9, Conduit-street, the President, Professor Aitchison, A.R.A., occupying the chair.

The minutes of the last meeting having been taken as read, a paper on "The Great Mosque of the Omeiyades, Damascus," was read by Mr. R. Phené Spiers. The following is an abstract of the paper:—

Mr. Spiers commenced by a reference to the principal cause which led him to take up the subject, viz., the fact that, when travelling in 1866, he was accorded a special permission to draw inside the mosque, and had, therefore, in his possession illustrations of the great dome and other features hitherto unpublished. The destruction of the mosque by fire on October 14, 1893, led him, in February in the following year (when first he heard of it), to take up the subject in order to solve, if possible, the problem which has exercised the minds of many archæologists, viz., the determination as to what part, if any, of the mosque belonged to the Church of St. John, commenced by Theodosius in the middle of the fourth century (who utilised the remains of a Roman temple), and enlarged by Arcadius, his son, at the beginning of the fifth century.

The paper was virtually written two years ago, but the preparation of the plan, elevations, and sections was delayed by want of further information, now partially obtained from additional photographs. Mr. Spiers first described the mosque itself, the main building of which runs east and west, and is built in between two ancient towers at the south-east and south-west corners respectively. The mosque measures internally 446 ft. by 123 ft. Exactly in the centre is an immense transept running north and south, with a dome over the crossing and on each side, viz., to the east and west; a nave and aisles, or, more strictly speaking, three aisles (for the divisions are of equal dimensions), 180 ft. long.

The north and south transepts have horizontal ceilings in wood, carried on beams supported on corbels, all richly carved, painted in brilliant colours, and gilded. The dome on the crossing is carried on squinch pendentives; the nave and aisles to the east and to the west of the transept are divided each by an arcade of eleven bays, with columns taken from some more ancient edifice raised on octagonal pedestals and surmounted by Roman capitals and Byzantine dosserets. Above the arcades the walls are pierced with semi-circular arched openings. Similar openings of the same size run the whole length of the mosque in the north and south walls, being there fitted with pierced arabesque designs in stucco filled with stained glass. On the north side of the mosque is the great court, of the same length as the mosque, and 160 ft. in depth, surrounded with an arcade with openings above, similar in size and design to those already mentioned in the nave and aisles. Externally the mosque is of the simplest design. The walls are all built in ashlar masonry in courses varying from 2 ft. 9 in. to 3 ft. in height. The transept rises 30 ft. above the walls of the two wings, and has a low-pitched gable on the north and south fronts, with a single bold ogee moulded cornice. There are three minarets, two of them built on the ancient towers between which the mosque was erected.

The principal entrances are the triple gateways with bronze doors on the east and west sides, which lead into the great court. In front of the east and west gates there existed a double colonnade, the remains of which are built in the shops at the side, and at the west end of the western colonnade is a magnificent archway, the greater portion of which still exists. Forming part of the south wall of the mosque are, first, the two towers before referred to, one of Syrio-Greek Work, the other Roman or Byzantine; and, secondly, the great doorway of the Roman temple which served as the entrance to the church of St. John, and was used afterwards by both Christians and Moslems, when the church was divided into two portions.

After a brief description of the chief historical events connected with Damascus, Mr. Spiers, relying on Mr. Guy le Strange's admirable translation of the works by the mediæval Arab geographers, proceeded to trace the history of the mosque from the time when it was entirely rebuilt, in 705, by the Khalif Al Walid, down to the present day. The conclusion arrived at by Mr. Spiers is that Al Walid first pulled down the ancient church of St. John and then built the existing mosque, which is virtually the same now, subject to restorations of the north minaret, and the addition of two others, to the cementing over of portions of the exterior stonework damaged by the fires of 1069 and 1405, and to the encasing of some of the columns of the great court. In conclusion, Mr. Spiers described the remains of Roman work existing round the mosque, drawing especial attention to the great gateway on the west side, which he considered to be the portal of a Roman palace no longer existing. The paper was illustrated by plans, sections, and elevations of the mosque, mainly derived from his own drawings and from photographs, and based on the plan measured by Sir Charles Wilson, and published in Fergusson's "History of Architecture;" by drawings made in 1866; and by numerous photographs taken before and after the fire in October, 1893.

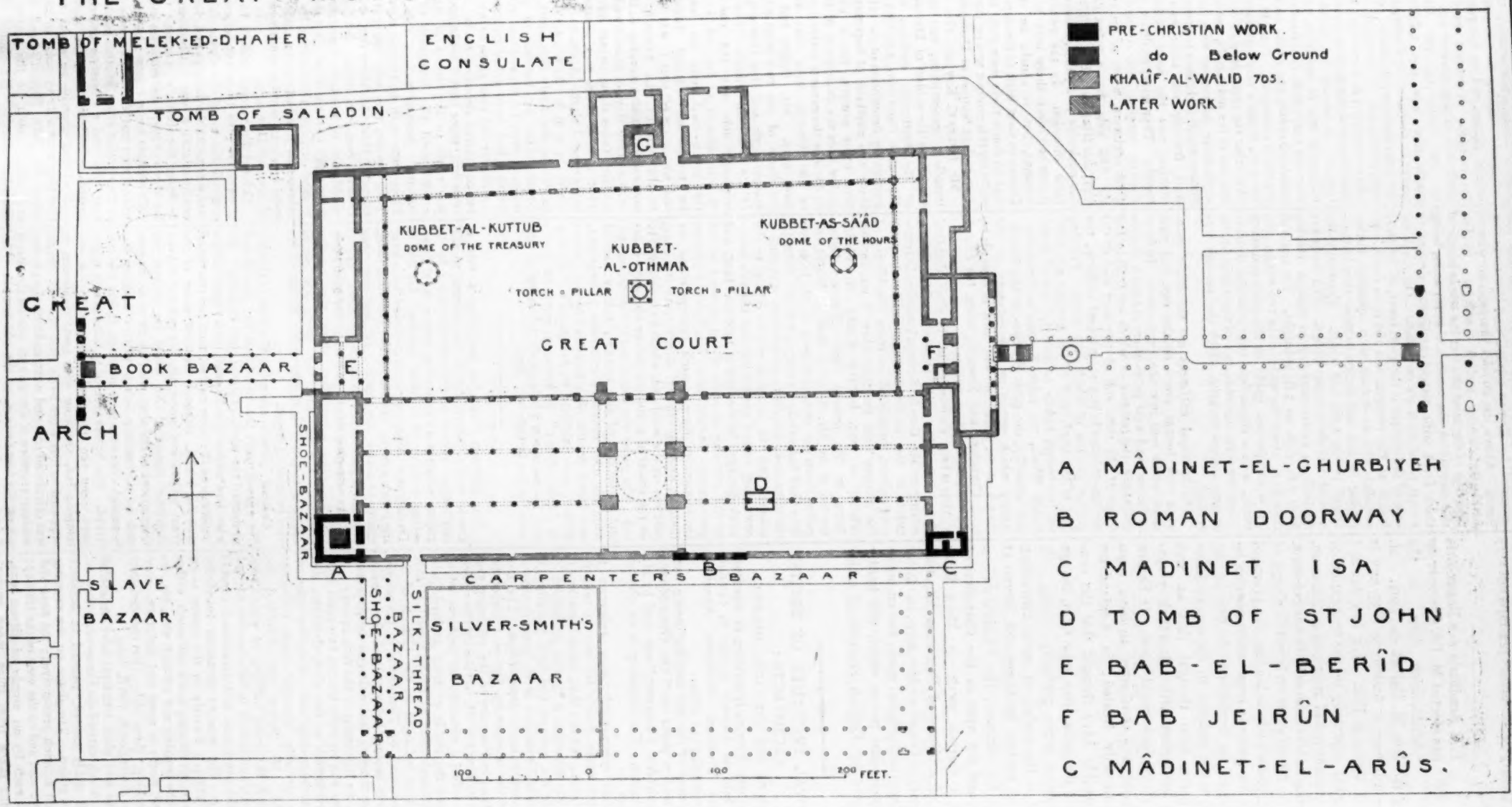
Mr. Holman Hunt, in proposing a vote of thanks to Mr. Spiers, said it was difficult to add anything of interest to what was contained in the paper, which was one dealing with a most interesting building of different epochs. He was in Damascus in 1854, and he then looked with longing eyes upon the outside of the building, being unable to obtain admittance. He had ever since retained a great desire to know all about it, and he was very glad indeed to have so far been satisfied with the information about the existing remains. He was sure that every one would desire to return their thanks to Mr. Spiers for his very interesting paper.

Colonel Watson seconded the vote of thanks. He agreed with the belief that the Khalif had destroyed the whole of the ancient building. All who had visited the Mosque, and examined the buildings as they now existed, must feel convinced that Al Walid, although he used much of the great pillars and materials, left none of the old structure standing. No doubt he utilised the foundations of the south wall for its whole length, and he fortunately left a piece containing the beautiful doorway to which Mr. Spiers had referred. Mr. Spiers seemed to think that it might have been the principal entrance of the old temple; but, speaking with great diffidence, it appeared to him more likely that the old temple was orientated east and west, and that the present western entrance of the mosque was on the site, if not on the foundations, of the old temple. Mr. Spiers seemed to think that the boundary of the ancient temenos was probably on the lines of the colonnade running to the south of the Silversmiths' Bazaar, and on the present north wall of the mosque. It seemed more likely that the south side of the temenos was on the colonnade to the south of the bazaar, that the north side was the colonnade which ran north, as described by Porter, at right angles to the great western colonnade. It might be a pure coincidence, but if the length of the cubit was taken as being 1 ft. 6 in.—and it was very likely that they used the cubit in laying out the ancient temple — it would be found that the south colonnade was as nearly as possible 100 cubits from the south wall, *that from the south wall was about 200 cubits*, and it was another 100 cubits to the north colonnade. It might be a coincidence, but if so, it was a very curious one, and it seemed likely that the east and west colonnades were on the axis of the old temple, and that the north and south outer colonnades were on the lines of the ancient north and south temenos; while the inner wall, forming the outer wall of the present mosque, was the inner enclosure of the old temple. They were, no doubt, all aware of how Eastern temples were generally built—with a great enclosure, while in the centre, usually on the east side, was a pylon in the case of the Egyptian temples. The people thus went from one enclosure to another, always keeping in the same direction. In the present instance Mr. Spiers had taken them back to the time of the Romans, but it should be remembered that Damascus went back to the days of Abraham, so that no doubt there were great temples there, and probably this mosque was on the site of one of the very ancient temples of Damascus.

Mr. Henry C. Kay said that among the Arab travellers, geographers, and others who have written on the subject of Damascus, was a Moor of the fourteenth century, who visited the Mosque in those days, and who had left a most interesting description of it. He did not believe there was anything of importance known of it from other sources, but it was interesting to gather from the description of this traveller that in his day the general features and configuration of the Mosque were very much what they now were. Mr. Spiers had told them that the bases of the two minarets were probably ancient work, and that they might even be part of the Christian church. The minaret on the south-east side was the one usually known as the minaret of Isa, while the minaret on the south-west bore an inscription, which he remembered seeing twenty years ago, and which stated that it was built by a Sultan at the end of the fifteenth century. The minaret was built according to the plan common in those early days of Mahommedanism—namely, a square tower rising square from top to bottom. That type of tower was general at that time, being carried by the Arabs to Barbary, where it might be seen to the present day. It was also carried by the Arabs into Spain, the Giralda in Seville being an instance of it. In Egypt a different type of minaret was adopted, and the question had been asked whence it was derived. An answer had been given to that question, which he considered deserved to be looked upon as something more than a conjecture, and reference was made to the Pharos of Alexandria, which existed until the beginning of the fourteenth century. Several writers told them that that Pharos was built in three stories, the lower one being square, the next octagonal, and of less diameter than the lower one, with a balustrade running round it, while the topmost story was round, and of a smaller diameter. If a drawing were made of these indications they would obtain a most striking resemblance to the Egyptian minaret as it existed there, and of which a very good specimen was the south-west building in the Mosque of Damascus.

Colonel Prendergast wished to ask Mr. Spiers if he could give them any information as to the original history of the shrine of St. John. It was a remarkable thing to find that in a mosque, centuries after it was a Christian church, was to be found the shrine of a saint. Only within the last three or four hundred years had churches been built without some reason; before that time they were always reared for the purpose of doing honour to the remains of a Christian saint. Given, then, that this was a Christian church—and it was agreed, he believed, that the south wall was the wall of that church—he could not help feeling that they were able to point to the original spot where St. John Baptist's head was enshrined, and which would be the central point of the Christian church. He should think that the arcade was entirely put up by the Moslems, and

THE GREAT MOSQUE OF THE OMEIYADES. DAMASCUS



that the shrine was the reason why the church was built.

The President remarked that people were apt to fancy that those savages who came out of Arabia brought some architecture with them. It would appear, however, that they were almost absolute savages, and that, after they left Arabia, almost everything done for several centuries was by assistance obtained from the civilised countries around them. In the days of Mahomet, they were very ignorant of anything in connexion with building, although doubtless they could build a common stone wall. When the Kaaba was washed down they managed to build up the walls, but when they were anxious to have it roofed there was no one who knew anything about so simple an art as roof-carpentry. A vessel having been wrecked off the coast, they applied to the captain, who informed them that he was a great architect, and that he would roof the building if they would buy the timbers of the wreck, and so he and his crew managed to put a roof over it. Thus, up to that time the Arabs could scarcely be considered as clever architects, and he doubted whether they improved much for a good many centuries afterwards. It was only between 705 and 715 when Walid lived, therefore the chances were that it was not an Arab who did any of the work. The portions of the old Roman temple appeared very light, and it looked as if it was of about the time of Diocletian, the whole structure reminding one strongly of his villa, or palace, as it had been sometimes called, at Spalato. These extraordinary savages, as they became a little more civilised, doubtless absorbed much of the learning of the ancients, and gradually became the most civilised people in the world. To them a new phase of architecture was due, but he fancied it must have been very much later than people generally gave them credit for. They knew that Abdurraman, the last of the Omeiyades, was not long after Walid, and it was said that he had drawn some of the bases of his celebrated mosque at Cordova. The mosque of the early Arabs appeared to have been a shelter or a mere wooden shanty, the supports being made principally of palm trees, and no doubt this mosque of the Omeiyades was something of the same sort. Arabic and the records of the Arabs had been little studied amongst even the most civilised nations of the west.

The vote of thanks was then put and carried by acclamation.

Mr. Spiers, in replying, said he had had great difficulty in arriving at any result as to the position of the Roman Temple. He was much obliged to Mr. Kay for his remarks, and for his reference to the other authors. With regard to the tomb of St. John, he had said little about it; because, as a matter of fact, it had nothing to do with his argument. There was assumed to be a cave there where St. John was buried, and a record was to be found in one of the Arab authors referring to the fact that the cave was opened, and the head of St. John was found, whereupon the cave was carefully closed up, and the head placed under the fourth pillar. There was always a fancy, however, among old writers, as to placing remains under pillars. St. John was a saint of the Moslems, and no doubt a shrine would be erected over his remains. A good deal might be said as to the richness of the details of the mosque, the whole revenues of Syria for seven years having been spent upon it, and large numbers of artisans being brought from Byzantium. No doubt it was constructed by Greek and Persian workmen, and the reason why large sums were spent upon it was that it might rival the Church of the Holy Sepulchre at Jerusalem. The Mohammedans began by constructing simple buildings; but after they came in contact with other nations who had splendid churches, they did their best to rival these structures.

The President announced that a business meeting for the election of candidates would be held on Monday the 30th inst. At the conclusion of this meeting a special general meeting would be held, when the books bequeathed to the Institute by Mr. W. H. White, the late Secretary, would be laid on the table, and a selection of his drawings and sketches be exhibited on the walls. Mr. Arthur S. Flower, one of the hon. secretaries of the Literature Committee, would give, during the evening, a brief description of Mr. White's drawings and architectural work.

The proceedings then terminated.

APPOINTMENT OF SANITARY INSPECTORS.—The Local Government Board has sanctioned the appointments of Messrs. T. W. Calverley and H. Herbert as Sanitary Inspectors in the parishes of St. James, Westminster, and Penge respectively.

Sketches of London Street Architecture.—VIII. Nos. 52-53, Parliament-street. Mr. H. Huntly-Gordon, Architect. (*For detail of entrance, see separate plate in this issue.*)

SKETCHES OF LONDON STREET ARCHITECTURE.—VIII.

NOS. 52-53, PARLIAMENT-STREET.

THIS building was carried out from the design of Mr. H. Huntly-Gordon, Messrs. Perry & Co. being the builders. The whole of the three fronts have been built in a special, hand-dressed, grey terra-cotta, very much resembling a warm-coloured stone; it is intermixed with hand-made red sand-face bricks, five courses to the foot in the lower part and six courses to the foot above the third floor level. The terra-cotta and bricks were all supplied by Mr. S. H. Leech, of Harroway Works, Battersea, who also actually built the walls. The electric light is by Messrs. P. H. Tewson, and the lifts by Messrs. Waygood.

A separate illustration showing the detail of the entrance will be found among the plates in this issue.

APPOINTMENT.—Dr. H. M. Wilson, of Shrewsbury, has been appointed Chief Inspector of Rivers for the West Riding of Yorkshire, at a salary of 700*l.* a year and expenses.

BEAUTIFUL CITIES.

THE second of the series of lectures in connexion with the Arts and Crafts Exhibition Society was delivered in the New Gallery, Regent-street, on Thursday evening last week, by Mr. W. R. Lethaby, whose subject was "Beautiful Cities."

The lecturer said that his purpose was to suggest a historical background to modern London—a perspective reaching back to the first primitive city, of which London was the final result—so far. He then dealt with the origin of an ancient city, pointing out that it was founded on religious worship, and that its organisation was absolutely religious. As a type of other ancient cities he took Jerusalem, and considered its most characteristic feature, the Temple, which was separated from the rest of the city by a wall, and was the original military stronghold. The growth of Athens was almost parallel to that of Jerusalem, and the lecturer briefly referred to the architectural monuments of Athens, and the evidences of its refined art and life. After the conquest of Alexander, cities of

great magnificence were built in the East, such as Alexandria, Antioch, Palmyra, &c., but they were not of the same pathetic beauty as either Jerusalem or Athens; though there was even more of material grandeur. Having briefly referred to Rome and Constantinople, the lecturer dealt with some of the cities of the Middle Ages, when the mere getting through of life appeared to have been made romantic. If a history of the thirteenth and fourteenth centuries was ever attempted, before the monuments were restored out of existence, it would be found that art was not then the effect of an accident. The central principle of the Middle Ages was the guild system, and the misleading phrase, "Gothic architecture," should give way to some such phrase as "masons' craft" or "guild work." Paris was the centre of the mediæval movement, and the most beautiful city in the Western world. It was clearly divided into city, university, and town. After a brief reference to Roman London, Mr. Lethaby spoke of the romantic beauty of Chaucer's time, when the city had recovered from the effects of the Black Death. Its most noticeable characteristics were the tall leaded spires, sometimes gilt, and the whiteness of everything, the houses being all whitewashed. As rebuilt by Wren, the city was fine enough, but its romance had gone; scholarship had superseded living art, and a pretentious and unrealisable grandeur was aimed at. The suburban house—"a mere box of bricks"—was the growth of this time, and the suburban garden—though the gardens were nice, and very different from the modern bedded-out square. His heart almost failed him in dealing with modern London; its enormousness, its half-hundred square miles of houses, its interminable avenues and streets, its pipes, lamp-posts, wires, its pageant of November 9, and its underground labyrinth, the Inner Circle, which Dante might have added to his "Inferno." The time would surely come when men would tire of perfecting means to mean ends. As to future improvement, there was ground for much hope; but it was necessary to recognise how ugly London was even among modern cities. What was required first of all was a reliable history of London, especially in the Middle Ages, not overlaid with the history of the theatres and the coffee-houses. Paris had such a history, and if we were to have good citizens we must teach in our schools the traditions of good citizenship. "If only the County Council could subsidise the French Government to undertake a history of London!" They must begin with small things and get rid of the "grandeur" idea of art—as to which they had but to go to Vienna to see what modern mechanical grandeur could become like. Art was the well doing of what was worth doing. Unless there was a ground of beauty, vain was it to expect the fruit of beauty. They must begin in the humblest way, by sweeping the streets better, by washing and whitewashing houses, and by taking care that such railings and lamp-posts as were required were good—the best that could be obtained at present. As it was, we spent tens of thousands of pounds in teaching design, and then we neglected to employ the designers.

THE ARCHITECTURAL ASSOCIATION:

LEAD, COPPER, AND ZINC.*

'As against slates or tiles, sheet metal as roofing material has obvious advantages. The sheets of metal may be depended upon to keep the water out from roofs constructed very nearly on a level, that is to say, with only just slope enough to give a fall for water, while tiles or slates require a considerable pitch.

Then, if the metal is either zinc or copper, there is the important advantage of lightness; and, finally, sheets of metal are not liable to the dangers of being cracked or slipping off, as tiles and slates are.

As to the difference in weight, I may mention here that for a 100 ft., whereas copper, well laid, will weigh only about 1 cwt. and zinc 1½ cwt., slates to cover the same area will weigh from 6 cwt. to 7 cwt., and tiles about 14 cwt.

In attempting to compare the relative claims of each of the three metals—lead, zinc, and copper—as materials for roof covering, one has first to consider what are the chief requirements for a material used for this purpose.

These may be stated in the following order:—First of all durability; then lightness; then workableness; next, capacity to resist fire; and, lastly, insonorousness.

Although the question of durability must be decided chiefly by experience and observation of special instances, yet something may be predicted as at least highly probable from a consideration of the texture of the metal and its liability to corrosion from acids, &c. Into this inquiry, of course, the element of weight largely enters, and I therefore take the opportunity of naming specific gravity and atomic weights of each of the three metals:—

Specific Gravity.		Atomic Weights.	
Lead	11·4	Lead	207
Copper	8·8	Copper	63·5
Zinc	6·9	Zinc	65

or, taking the weight of a superficial foot $\frac{1}{8}$ in. thick we find it—

Lead	about 3¾ lb.
Copper	,, 2¾ ,,
Zinc	,, 2¼ ,,

Thus, if weight were the only consideration in this inquiry as to durability, lead would be nearly twice as durable as zinc and at least a third more durable than copper. But there is another element which must be equally considered—namely, the hardness or, rather, firmness of the material, and perhaps this property can best be indicated by the relative amount of conductivity, which in lead may be represented by 230; nearly twice as high in zinc, say 430; while in copper it is more than twice as high as zinc and more than four times as high as lead, viz., 1,000.

And the conclusion which we might derive from these figures is corroborated by those which represent the fusibility of the different metals, viz., lead, 630 deg. Fahr.; zinc, 800 deg. Fahr.; and copper, nearly four times that of lead, and nearly three times that of zinc, viz., 2,143 deg. Fahr.

It thus appears that though lead is so very much heavier than the other two metals, its want of firmness is still more conspicuous, and, on the whole, roughly it might be guessed that lead and copper would, surrounding conditions being equal, be of about equal durability, particularly as neither of these metals is easily acted upon by acids.

As to zinc, although it occupies a middle place between lead and copper, both in the matter of weight and also of firmness, it is yet quite out of the competition as to durability from the fact that acids act upon it with great facility.

The softness of lead has its advantages, since it is easy to use it of great thickness, while at the same time the low price makes it possible to do this without a prohibitive outlay; so that lead may be laid of a thickness weighing perhaps 6 lb. or 7 lb. to the foot as easily as copper weighing only 16 oz. or 18 oz. to the foot. And at these relative weights it would be fair to assume that the metals would be about equally durable. Experience endorses these assumptions, and it is found to be practically the case that zinc, laid of the best thickness which it is worth while to use, say about 1½ lb. to the superficial foot, will keep a roof sound for twenty to thirty years, while copper of 16 oz. to the foot, or lead of 7 lb., form either of them a practically permanent covering lasting 100 years or upwards. That is to say, if properly laid and in favourable situations.

But the question of durability cannot be disposed of without a consideration of the property of expansion. When a zinc flat lets in water, and has to be taken up for renewal, it is often seen that the metal is not perished, but is split into cracks. The heat of the sun has so increased the size of the metal that, having been fastened by nails, or soldered together in large sheets, it has risen in buckles. When a shower of rain or a cold night has followed, the metal has contracted, and so caused the cracks. Zinc expands more than either of the other two metals, but lead is nearly as bad. Here copper has an immense advantage, as it expands only a little more than half; or, taking exact figures, if the expansion of zinc is set down at 30, lead will show 28, and copper only 19.

In laying either of the metals care has to be taken to allow for expansion, and if the proper methods are adopted much can be done to prevent the injurious effects of it; but in considering the relative durability this property must not be forgotten.

There is one other thing to consider—viz., the capacity to bear traffic without injury. Flat roofs are very likely to be walked over, and to have things placed upon them, round or under which dirt and moisture can collect. On account of its extreme softness, lead, unless very thick, is easily damaged by traffic; and zinc, although harder, is brittle, and is also easily corroded by foreign matter; and both, as already mentioned, are exceedingly liable to buckles and cracks. Copper, on the other hand, is so tough that it is practically uninjured by traffic and little liable to corrosion. It should, however, be laid with wood rolls and welted caps, and not according to the old method of stand-up welts.

So far for flat roofs. For pitched roofs and towers or spires the great weight of lead is much against its use. In such positions lead has a way of crawling down, as it is called, and this is a very destructive process and greatly shortens its usefulness. As an instance of this I may mention that some years ago we had an order to cover the spire of St. Peter's Church, Cornhill, with copper. It was then covered with lead, which we ascertained had been laid in the year 1804.

When the lead was stripped off it was found to be very thick—some of it at least from 10 lb. to 12 lb. to the foot, and was not perished, but was very badly torn and cracked through the expansion and contraction and the creeping down in some places, and the giving way of the wood supports in others. In fact, its own weight had destroyed it.

The copper which we put on in place of it would weigh perhaps not more than ¼ or $\frac{1}{5}$ of the lead, and would rather tend to support the woodwork than require to be supported by it. The key which forms a sort of finial on the top of the spire was in good repair and did not require renewal—it was of copper. It is said, but I am not sure upon what evidence, that the lead on the roof of Bristol Cathedral crawled down as much as 18 in. in two years.

The extreme softness of lead makes it also unfit for ornamental work. It is always necessary, when lead is being used, that the wood should first be formed into the shapes, and the lead dressed closely over these; on account of their stiffness zinc and copper do not require the mouldings and ornaments to be formed in the wood, but are sufficiently supported by a rough wood core. Zinc, however, suffers in the process of stamping and hammering, as it is seriously injured by the application of heat.

Copper, on the other hand, may be heated to a red, or even a white glow, and then immersed in cold water, without being in any way injured, but by this annealing, as it is called, is rendered soft and pliable, and regains its stiffness under the hammer or stamp.

On these accounts copper has come to be very much used for ornamental roofs and for spires, flêches, finials, figures, &c., for which it is also specially adapted on account of the little weight per foot which it is necessary to use.

Lead has been so very largely used for roofs for many hundreds of years that it is unnecessary to quote instances as to its lasting power when properly laid on flat roofs, but as the durability of copper is not so well known, I may mention one or two examples.

The Tower of the Parish Church of Hampstead was covered with copper in the year 1784, and the copper is still in good condition, being of a beautiful green colour. Some years ago, however, in a severe gale, two or three of the sheets were blown off, and had to be replaced by new sheets, which, of course, have still the dark look. Mr. Clowser, a builder, of Hampstead, told us that his old father knew that the tower was covered with copper over 100 years ago, and the church records give the date above-mentioned.

A few years ago we had to replace a copper flat on the roof of Somerset House. The copper itself was not perished, as may be seen by the sample which we kept. The reason it had to be replaced was, that it had been laid in the old style with stand-up welts, and these had been trodden down and broken. There is good reason to believe that this copper was laid when Somerset House was built.

We have also obtained a sample of the copper on the church of St. Botolph's, which is very thin, weighing only about 14 oz. to the foot. The metal is still not perished, although probably laid when the church was built. Through the sinking of the timber it is out of repair, and this is one of many instances in which the copper covering outlasts the material of the building. A remarkable instance occurred some little time ago, which showed, at the same time, the great durability of copper and the importance of having it properly laid.

We were instructed to take the old copper off a church in Wiltshire, and were told by the architect that it had been laid 250 years ago. The flat sheets were not perished, but the standing welts were worn through. We cut the worn edges off the sheets, and relaid the same material with wood

* Being the third paper on "Roof Coverings," read before the Architectural Association on the 6th inst. by Mr. G. Ewart. The papers on "Tiles" and "Slating," by Mr. F. Walker and Mr. T. Stirling, jun., respectively, were printed in our last issue, page 396.

rolls, after repairing the wood work, which had rotted where the upright welts had admitted water.

Next to the paramount question of durability comess that of weight, or, we should rather say, of lightness. Here, of course, lead cannot stand comparison with either zinc or copper. Lead is so soft, and has so little coherence that in order to make a good job, it is found necessary to lay it very thick—nearly ⅛ in. But, at the same time, lead is exceedingly heavy, so that a square foot of this thickness weighs upwards of 7 lbs.; it thus happens that when allowance has been made for the necessary rolls and laps, the lead necessary to cover a square of 100 ft. weighs rather more than the slates which would be necessary to cover the same area, and at least half as much as plain tiles.

Zinc, on account of its superior firmness, is laid in the best manner at about one-fourth of this thickness and less than one-fourth of the weight, say 1½ lbs. to the foot; but then, as already mentioned, zinc cannot be relied upon to stand more than about one-fourth of the time that lead will.

With copper, however, the case is different. Here we have at least equal durability to that of thick lead, with a thickness still less than that of zinc, and a weight of only 16 oz. to the foot.

On new structures, substantially built, the question of a few tons, more or less, upon the roof, is not, I suppose, of very serious consequence. Yet, even in such structures, it may be often worth while to be able safely to use lighter timbers; but for an old roof, where the supports are not too strong, a few tons, one way or the other, may make a very great difference. I may quote as an instance the flat roof of the Portman Rooms. We found this covered with lead and leaking all over. In many places the woodwork had sunk, and to cover it with lead would have been exceedingly dangerous. But a perfectly safe and a perfectly sound job was made with copper.

It is unnecessary to add that as a covering to spires, flèches, domes, and suchlike erections, the comparative lightness of copper makes it exceedingly appropriate.

Coming now to the next desideratum in a roof-covering, which, for want of a better word, I have been obliged to name "Workableness," I must explain that I mean by this the possibility of being turned up with moderately sharp angles and twisted over into welts. As already mentioned, all the three metals under consideration expand and contract with changes of temperature—though copper very much less than either zinc or lead—and therefore all require some arrangement which will leave them free to expand and contract without blistering.

And then, of course, the sheets have to be somehow joined together, and the joint is to be made, if possible, without solder. For it is found that the places where soldered seams have been made perish long before the rest of the metal is worn out.

Although lead is so soft, yet on account of its great thickness it cannot be easily welted, and requires large rolls. On the other hand, its weight and softness incline it to lie close even without joints—only then, of course, it is easily displaced. Zinc, being the most expansive of the three metals, and being also more brittle than lead, requires great care in laying, and the provision of very free play for each sheet, both at the ends and sides. On this account, many drips are needed. This is sometimes very objectionable on account of the increase in height.

Copper, on the other hand, expands so little that if wood rolls are used at the sides of moderately-wide sheets, the ends may be safely welted together in considerable lengths, and so few drips are necessary.

At the same time, copper is so easily worked that welts are readily made, and may be used not only to connect the sheets in lengths but also to fasten them to the roll-caps at the sides, thus making a very firm and light covering. As a fireproof material, copper is immensely the best of the three metals.

As already stated, lead melts at 630 deg. F., and, therefore, in a fire is soon poured down in a terrible stream, more dangerous than even falling timbers or bricks. Zinc melts at 800 deg. F, and blazes brightly if thrown into an ordinary coal fire.

Copper requires a temperature of 2,143 deg. F. to fuse it, and retains its shape even at a white heat.

As an example, I may mention the instance of a tower in which the woodwork was entirely consumed, while the copper covering was left standing as a hollow cone, the flames and smoke having escaped by a hole in the top. Another instance illustrating this fireproof quality is that of Mr. Stedall's Mantle Warehouse, in Portsmouth. Here the copper roof was found intact after the fire, although the building beneath it was gutted; the copper sheets had, in fact, prevented the exit of the flames and stopped the spread of the fire.

The last property I named as required in a roof-covering was Insonorousness. Here lead has the immense advantage of its exceeding softness, and the same quality of softness makes it a non-conductor of heat.

For a long time lead was almost the only metal used for covering roofs, sheet zinc being practically unknown, and the high price of copper almost prohibiting its use for buildings where economy had at all to be considered.

The introduction of sheet-zinc about sixty years ago, and a great reduction in the price of copper during the last twenty years, have altered this state of affairs.

The change would have been greater still but for the fall which has at the same time taken place in the price of lead, partly on account of the improvements in the methods of separating the silver from it.

At the present market rates sheet zinc is, weight for weight, nearly twice the price of lead, and sheet copper, weight for weight, nearly three times the price of zinc, or about five times the price of lead. It is evident, therefore, that for temporary work sheet zinc is by far the cheapest metal covering, being properly used at one-fourth the thickness, while it is not quite twice the price of lead, and at the same time it has the advantage of lightness.

On the other hand, compared with copper, although it is not much more than one-third of the price, it requires to be laid at least half again as thick.

For a covering to permanent buildings zinc, for reasons already stated, is inadmissible; while copper and lead are perhaps about equally durable, so far as the metal itself is concerned.

Lead has the advantage over copper of making much less noise in driving rain or a hailstorm, but copper has perhaps still greater advantages over lead, being only about one-sixth the weight, being almost absolutely fireproof, requiring very little support in ornamental work, having only a little more than half the expansiveness under heat, and consequently requiring fewer drips. To which may be added its capacity for being easily welted, and finally the beautiful colour which it takes on from a damp atmosphere after a few years of exposure."

Mr. B. F. Fletcher, in proposing a vote of thanks to the readers of the three papers, said that the members must have learned a very great deal from them. It only showed that the Association was right in getting practical workers connected with the different crafts to bring their specimens, and talk about them; for the result, it would be agreed, had been eminently satisfactory. Mr. Walker had referred to the question of hanging the tiling, and seemed to think that fixing blocks were necessary. He (the speaker) believed that in building a wall it was better, instead of laying the bricks on their beds, to lay them on their sides, thus getting a 4½-in. gauge, and being able to nail into the brick joints. Mr. Walker's remarks on tiling were exceptionally interesting. Architecturally, he always liked to use the green slating in preference to the purple-coloured slates. If the County Council had, in the new Building Act, put the other Welsh slating out of use, they would have done something very satisfactory. A green slate looked well, kept its colour fairly in London, and had not the objectionable dull appearance that Bangor slating seemed always to possess.

Mr. W. H. Seth Smith, in seconding the vote of thanks, said that the details had been explained with very great care, and the explanations had allowed for their ignorance on any of the points. He would like to have Mr. Walker's views as to the best methods of repairing tiling. It appeared to be one of the most difficult things, when tiles got broken, to repair them in a way that was thoroughly durable, and at the same time, not very expensive, owing to the removal of a large number. He remembered a tile, which he thought was called the Asheworth tile, being put down some time ago, but he had not heard the result of it. As far as he remembered, it had a double nib, and there seemed to be some difficulty in preventing the tiles breaking in transit. The purpose of this tile was to prevent the new repairing tile coming down again. He would also like to ask Mr. Walker whether he had found that tiles of the consistency of the Reading red tiles were not durable? They seemed very close, were of a beautiful red colour, did not vegetate, and seemed to be altogether satisfactory tiles, although they had such a brilliant red colour. Where a house was surrounded with foliage, and especially with dark green firs, the effect was very beautiful. With reference to the over-hanging of the secret gutters, and the non-pointing at the edge of the over-hanging tiles, he could understand the importance of not pointing them with mortar, but strongly gauged Portland cement ought to make a good job. He was afraid that Mr. Fletcher's suggestion to the County Council to prevent unsightly slates was not quite practicable, as they did the most harm in the country. He would like to know something as to the relative cost of the samples of slating they saw on the table, especially the grey and green slates, some of which were very beautiful. He also wished to know whether Mr. Stirling would recommend a valley cut in slate, instead of lead valleys. It seemed quite practicable to cut the slates so as to form a thoroughly weather-tight valley. With reference to Mr. Ewart's paper, they must all feel indebted to him for the comprehensiveness of his paper, and the large amount of information which it conveyed.

Mr. Hampden W. Pratt, in supporting the vote of thanks, said that different methods of laying tiles were very numerous, and his practice had always been to ascertain, in a district where he had to put a tiled roof, the local mode of doing it. He had found that unless there was some very good reason against adopting that method, it was generally the best to follow; at any rate, one was pretty certain to get the work done in the best way. These local methods varied considerably, and it was very difficult to form an opinion as to which was the best. Personally, he was opposed to bedding tiles, and now that they were made to fit as closely as slates there was no need to bed them. If a very uneven tile was used it might be advisable to put a thin layer or fillet along the head of the tile, but certainly nothing more. He had had tiled roofs torched inside, but he did not think there was any necessity to go to that expense. With regard to the method of hanging the tiles, some men thought that it was quite unnecessary, where they made these tiles with the nibs, to use nails as well. He remembered the case of a rather exposed position on the Surrey hills, a couple of years ago, where the builder strongly persuaded him that there was no occasion to use nails, and following his advice, the very first gale stripped off a lot of the tiles. He was rather surprised at the position that stripping took; one would naturally think that the verge of the roof was most exposed, but it was right up the valley where the tiles were stripped off, though valley tiles were used and bedded. With regard to the tilting up of the hip tiles, personally he rather liked the look of them, but if they got a tile at a wrong pitch, and the vertical joint did not fit well against the other tile, it looked bad, though a little tilt up was really effective. A secret gutter, he considered, did not look satisfactory. Mr. Walker appeared to say that they should not use secret gutters where there was anything of an atmospheric nature which might choke them up, but if this rule was applied they could never use secret gutters at all. He remembered the case of a house situated among trees where these gutters were soon choked up with leaves. He did not intend, therefore, to try that method again. The best method was to use soakers, and preferably zinc soakers, because the thinness of the zinc did not tilt up the tiles so much. With regard to hanging tiles, Mr. Fletcher had suggested a course which he had adopted, of building the brickwork on edge, to nail the tiles into it, but he had come to the conclusion that fixing tiles by nails on brickwork was not satisfactory. He had given it up, and last year went back again to the old system of battening on the outside. The battening could be secured quite effectively, when nailing could not be depended upon, while in the case of repairing it was more difficult to fix the tiles otherwise than to fix them to the battening. The settlement of the brickwork, especially if the tiles were bedded, had a tendency to crack them, while more play could be got to the tiling, and it could be repaired better if they adopted a way of fixing vertical battens and laths. With regard to the Broseley tiles, one disadvantage was their colour, for unless dark tiles were used a very raw colouring was obtained. He considered himself that the best Broseley tiles were the darkest. If the paler colours were used they did not go so well with red brickwork, and the result was that a lighter roof covering was obtained than the shade of the wall, which was not satisfactory.

With regard to the fixing of slates, it seemed to him that the local modes of doing this should be studied. In Cornwall, the local people considered that the proper way was to plaster the soffit of slating with lime and hair, and he had adopted that method. Mr. Ewart's paper was an extremely valuable one, for it had taken them through the different metals, and had compared their merits and uses in a practical and useful manner—in fact, he did not believe the members had ever had laid before them so good a description of copper, as compared with zinc and lead. Now that copper was so much cheaper than it used to be there seemed to be a future before it, and one would like to have the opportunity of using it often in place of lead. He also wished to ask whether it was possible, with regard to copper, to adopt a very different section of roll? He had a weakness for the round roll used in the case of lead, but he did not like the square section used in zinc. The method of laying it on a square top seemed naturally to suggest itself, but was it not possible to adopt the round form, which was very much preferable in appearance?

The Chairman said that there was a skeleton in the cupboard of this roof material question, which had not been brought out that evening, principally owing to the fact that their friends had been exceedingly practical. The thing, however, had been present in his mind the whole evening, and it was the colour fad. He had no hesitation whatever in stating that the revival of tiled roofs was mainly due to a passing colour fad, and could they in their calm practical moments come to the conclusion that a tiled roof was a better roof than a slated one? When they were considering the slate roof some years ago at the Arts and Crafts Society, he heard William Morris denounce every architect who ventured to use Staffordshire tiles or Welsh slates. Now, the purple slate was the friend of civilisation, and there was no use in denying it; it was the slate of our stations, our warehouses, and our workhouses. It was only when the work was put into the hands of some architect with the colour fad, that he fell back on the green slates, and this brought him to the copper question, for Mr. Ewart's paper was copper-coloured. Mr. Ewart had been urging upon them the advantages of using copper, and his temptations in this direction fell truly upon willing ears, for they liked it on account of its delicious colouring. But dismissing the consideration of the colour fad, was copper ductile enough and economical enough, and would it compete with lead roofs as to cost? Putting wood timbering and everything into the scale, could they give a serviceable copper spire, or flat, or oriel curved roof for a price comparable with lead? Mr. Fletcher had touched on the trick of building bricks on end to hang tiles upon, but he believed that was illegal. No doubt it had been done again and again, but a great many district surveyors and others would tell them, with the utmost assurance, that a wall built in that fashion was not a wall at all—that there was no proper bed on the bricks, that it was more liable to settlement than it ought to be, and that it could not be considered brick work. He had heard of absurd people sometimes who chose a tile because lichens took to it, though it might be a wretched sort of article. He had a curious experience in the East. He came upon tiles there which were wired, and he found that in spite of the torrential rainfalls in Palestine these roofs of tiles, wired sometimes to laths of iron, answered very well indeed. They were large tiles, with two rolls, and three rows of nibs at the back, and wiring them at the top edge answered. Another form of roofing extensively employed in Palestine was a stone slab roof. These were roofs of large stone blocks, laid on vaults or girders in mortar, and pointed with a cement made of tile or pottery dust, combined with resin. They were laid closely together, and a whole family of Arabs sat down for weeks together caulking the joints with little mallets, just as one caulked the deck of a yacht.

The vote of thanks was then put and carried unanimously.

Mr. F. Walker, in replying, said, with respect to Mr. Fletcher's remarks as to bricks on edge, his experience was that nailing into the brick joints was unsatisfactory; but the chief reason why bricks had been built on edge to nail tiles on was because the tiles were in a vertical plane, and if nailed into the joints of ordinary brickwork would give a 4-in. gauge, which was considered objectionable. If they were to nail into the bricks they required something of the nature of breeze brick, which would give a grip to the nail. Reference had been made to the difficulty of repairing tiles, but there was no difficulty unless the tiles were nailed; and then the last tiles could be fixed with copper clips nailed in between the two joints and turned over the lower edges of the tiles. In speaking of red tiles he had in mind what were called sand-faced tiles. If they had the colour fad and used a soft tile, they would have a picture, but a tile which would not stand against the weather. It was customary to point the exposed edges of tiles, but that was simply because they could be seen. The reason why the tiling was stripped at the valley was because there was no pointing, and the wind had thus gained admission. The idea of zinc soakers seemed to be a good one.

Mr. Stirling also replied, and said, in answer to Mr. Seth Smith's query about the price of slates, that he had put down the costs of the various kinds, but it would be noted that these included the builder's profit. There was a difference between the red and purple slates, and he thought that, if anything, the red were more unsightly than the purple, though they were harder. Soakers were preferred everywhere, and he did not like secret gutters. The soakers made really a thoroughly satisfactory job, and he had no experience of any trouble having arisen from using them. Roofing-slates were composed in the main of silica and alumina. Should the slates contain too much silica the cleavage became "round" and difficult to split: hence one end of the roofing-slate was thin and the other thick—not uniform throughout; and, moreover, the slate was very apt to "pillar," or to break lengthwise; if, on the other hand, the slate contained too much alumina, it became soft, vegetated, and decayed quickly. The following was an analysis of old-vein slates:—Silica, 55·25; alumina, 24·60; iron oxide, 10·40; lime, 1·00; magnesia, 2·09; loss on ignition, 4·62; alkalis, 2·04; total, 100·00 per cent. As to how green veins came about, and the cause of green spots, he did not know of any one (geologist or otherwise) who had explained this question satisfactorily, but general opinion was that these varieties in colour were the effects of different chemical processes. Another analysis of an ordinary Welsh roofing slate was: silica, 60·50; alumina, 19·70; protoxide, 7·83; lime, 1·12; magnesia, 2·20; potash, 3·18; soda, 2·20; water, 2·30. Amongst the Cambrian slates of Carnarvonshire, blue, green, and purple slates were found, in which were oval, round, and irregular patches of white or pale yellow; in these occasionally appeared little lumps of the original material from which all colouring matter was absent.

Mr. Ewart, in replying, said that they could certainly make a round roll of copper, but it would give more trouble, especially at the top end. The President had spoken of the colour fad, and he might add that they always said at the end, when they tried to get an architect to specify for copper—"In addition, there is the beautiful colour." As to the colour wearing out, he did a little roof at Ramsgate, which the proprietor wished to become green at once. He therefore sent down orders to the man who was doing it to make it green, and when he saw it some time after he found it of a peculiarly offensive green colour. The roof of York Cathedral, he understood, was of a very brilliant green, and, if people would only have a little patience, copper of itself would take on a lovely colour. Since Mr. McKinley's election copper had gone up, though not to any very great extent; but even with the rise in copper they could do a roof almost any shape as cheaply in that metal as in lead, while sometimes, in the case of a very large plain piece of work, they could do it even more cheaply. That was also the case frequently when there was ornamental work to be done; but, taking the average all round, they could do a copper flat or roof of any shape or description about as cheaply as lead. If there was the question of a little more cost, it was so small that any one who cared for copper would not be deterred on account of the price. They occasionally received a good order for soakers in copper, weighing 12 oz. to the foot. At that weight it was not very much dearer than a zinc soaker, and was certainly cheaper than a lead one.

The proceedings then terminated.

A NATIONAL CHAMBER OF TRADES.—At a council of the Hull and District Chamber of Trades, held on Friday, the 13th inst., the following resolution was submitted by the President and carried unanimously:—"That this council recommends that steps be taken to arrange a conference, to be held in Leeds, of representatives of trade associations, with a view to the formation of a National Chamber of Trades."

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday in the County Hall, Spring-gardens, Sir Arthur Arnold, Chairman, presiding.

Loans.—Upon the recommendation of the Finance Committee it was agreed to lend the Lea District Board 4,470*l.* for granite paving works in Woolwich-road; the Greenwich District Board 3,030*l.* towards the cost of the Evelyn-street improvement; and the Chelsea Vestry 4,500*l.* for wood-paving works in Oakley-street and Pont-street.

The Works Committee.—The whole of the sitting was devoted to the consideration of the reported irregularities in the Works Department, and the following report from the Works Committee was submitted on the subject:—

"We regret to have to report that some grave irregularities have taken place in the book-keeping of the Works Department. The comptroller during his audit of the accounts drew our attention to certain improper transfers which had been made in connexion with the temporary buildings at Colney Hatch Asylum. We thereupon appointed a Special Sub-Committee, consisting of Messrs. Antrobus, Bicker-Caarten, Col. the Hon. H. Legge, Messrs. Lyon, Ward, and E. White, to consider and report upon the matter. We have now received a report from the Sub-Committee containing the result of their investigations and their recommendations, which is as follows:—

'The Sub-Committee appointed on October 19, 1896, to examine into the circumstances attending certain "transfers in" connexion with the accounts of the Works Department," which were reported by the comptroller as needing investigation, have held six meetings, at all of which the manager and the comptroller have been present, and at which, in addition to obtaining the reports and statements of these two officers, the Sub-Committee have taken the evidence of the following officers, viz.:—Messrs. Wise and Ruddle, the two principal assistants of the manager; Mr. Hutt, Mr. Wise's clerical assistant; Mr. Winter, late foreman at Colney Hatch temporary buildings, and now no longer in the employ of the Works Department; Mr. Horwood, now assistant foreman at Lewisham sewer works, and travelling time inspector; Messrs. Dyson and Pinnock, chief and second assistants in the book-keeper's department at the Central Works in Belvedere-road. The Sub-Committee desire at the outset to say that they see no reason whatever to think that any actual diversion for personal profit of the money or property of the Council has taken place, but, short of that, they find that a system seems to have been initiated and freely practised since April, 1895, under which frequent instances are producible of: 1st. Falsely signed and bogus transfers of materials from one job to another to which they never went. 2nd. Transfers of materials valued at altogether unwarranted prices. 3rd. Incorrect appropriation of invoices to a job where the goods were not used. 4th. Materials sent from stock and not debited to the job. 5th. The deliberate alteration, up or down, of the ascertained cost of a job for purposes of so-called departmental advantage. With these most reprehensible proceedings the Sub-Committee regret to find themselves forced to say that each and every one of the above-named officers is, in their opinion, proved to have been more or less in connivance. The object of these fictitious entries has been to endeavour to equalise the apparent result of individual operations, and not to allow any one job to show either a large profit or a heavy loss as compared with the estimate on which it was undertaken. "When we found we were going to have a loss," as one of the witnesses put it, "we took the profit from one job and gave it to another; it was a system of levelling up and down." In so doing "I thought it was to the advantage of the department." "The system of publishing the prime cost is fatal to the department." "Another reason was not to show too high a profit," from the fear, as was explained, that the estimates from the architect's and engineer's departments would be reduced in consequence. The chief instance of such proceedings, and the one from which this inquiry has arisen, was the transfer of 1,892*l.* 15*s.* 3*d.* from Colney Hatch to the Heath Asylum, Bexley, and Lewisham sewer works, the largeness of which attracted at once the comptroller's attention. It appears that the job at Colney Hatch was going to result in a very heavy loss as compared with the estimate, and that this was within the manager's knowledge soon after Christmas, 1895. The job was not actually finished till May, 1896, but before the end of the financial year, March 31, 1896, it was desired to get all possible transfers into the books for the closing of the year's accounts and the annual statement of stock. The manager, conscious of the impending loss, as against the original estimate of 17,500*l.* on which the job was taken, and saying, as he puts it, that it should not cost more than 19,500*l.*, so informs the principal clerk (Mr. Dyson), and instructs him to make what transfers he can. The principal clerk makes up an imaginary list of materials from the works at Colney Hatch amounting as valued by him to 1,892*l.* 15*s.* 3*d.*, specially obtains

the signatures of two foremen to the bogus transfers, and passes the amount to the credit of Colney Hatch and the debit of the Heath Asylum, Bexley, and Lewisham. The materials represented by this transfer never went to those jobs at all. Certain materials which really did go are represented by sundry subsequent transfers valued at 1,360*l.* 4s. 8d., *bonâ-fide* transfers as regards the materials, but over-valued to the extent of about 270*l.* It is also the case that certain materials were sent from the stock at the docks and not charged at all to Colney Hatch. The above is a short outline of what occurred in the case of the work at Colney Hatch. The Sub-Committee have investigated, as detailed in the shorthand notes, several other transfers between other works, and have found, they regret to say, the same laxity of practice existing to a large extent. The Sub-Committee consequently feel compelled to express their opinion to the Works Committee (and it is unanimous) that the services of Messrs. Dyson, Pinnock, and Hutt, and Messrs. Ruddle and Horwood, should be dispensed with as soon as possible, and in regard to Mr. Wise, whose action has been highly censurable, though not to the same extent, that he should receive a severe reprimand. The Sub-Committee feel that in the case of an officer so highly and responsibly placed as Mr. Wise he should have communicated to the Works Committee the improper proceedings which were going on within his knowledge. This he should have done, if possible, through his superior officer, failing whom he should have informed the Committee direct. In regard to the manager, who, as the head of a department, comes under the immediate cognizance of the General Purposes Committee, the Sub-Committee feel bound to report that he entirely denies having either authorised or had any knowledge of improper transfers or transfers at unjustifiable values, but in the face of contrary assertions by three of his subordinates, the Sub-Committee regret they feel unable to accept his disclaimer, and the more so, seeing that the book-keeper asserts that he placed before the manager statements of cost periodically, and that the return made in June, 1896, showed the large fictitious transfer as placed to the credit of the Colney Hatch job as compared with his statement of the previous month. Moreover, the book-keeper has produced a cost list of sundry jobs, in which, in the admitted handwriting of Mr. Holloway, are certain suggested arbitrary alterations of cost, both increases and deductions, which were approximately carried out, as shown in the declared cost of the jobs in the printed report of the Works Committee, dated June 22, 1896; and the significant fact attaches to the three jobs on which deductions were thus suggested, that they, by this process, ultimately came within the estimate figure, and thus necessitated neither a special report on the manager's part nor a special vote of the Council for the excess of cost, both of which steps would have been necessary had the true cost been allowed to appear. The Sub-Committee feel bound to say that in view of these facts they have no longer any confidence in the manager, and consider his retention of his present position highly undesirable. The Sub-Committee are glad to be able to present a report from the comptroller, made under great pressure of time, in which he deals with all the other jobs on which investigation has become necessary in consequence of the improper practises brought into play since April, 1895.

R. C. ANTROBUS, Chairman.'

We have also had before us a letter from the manager received since the date of the Special Sub-Committee's report. Mr. Holloway was present during the hearing of the whole of the evidence; we state this in case it might be thought from the first sentence in Mr. Holloway's letter that he was absent during Mr. Dyson's examination. [The letter characterised the statements of Mr. Dyson, so far as they incriminated Mr. Holloway, as a tissue of falsehoods. He stated that Mr. Dyson never laid a single document before him giving details of the illegitimate transfers until long after these had been passed into the books, except a memorandum of May 28, referring to the wages for that week.] Having fully considered the matter we entirely concur in our Sub-Committee's report, except that we desire to substitute the word 'impossible' for the words 'highly undesirable' at the end of the last paragraph but one of the Sub-Committee's report. We wish to emphasise two points as follows—1. We sincerely regret the malpractices on the part of some of our officials, which have led us to place two incorrect reports before the Council. We are sure the Council will be glad to see from the comptroller's report that the effect of these malpractices on the two reports in question has been to understate the profits shown to the extent of 889*l.* 8s. 9d. These incorrect statements of account carried forward a profit in each instance and not a loss. 2. The stock of plant and materials is valued on March 31 each year by independent officials outside the Works Department, and the valuation shown in the Committee's books is their valuation. Should any surplus or deficit be found (as is always the case to some extent) beyond that debited to specific works, it is added to or deducted from the General Charges Account, and spread over the whole of the works as explained by the comptroller in paragraph 3 in the early part of his report. Certain weak points in our regulations have been brought under our notice, and we shall at once proceed to rectify these in such a way as will render a repetition of these malpractices very difficult if not impossible. We have communicated with the General Purposes Committee with regard to Mr. T. Holloway. With reference to the other officials concerned we recommend:—(*a*) That the Council do at once dismiss: (1.) Mr. F. Ruddle, second assistant in the building branch; (2.) Mr. W. F. Dyson, principal clerk in the Works Department; (3.) Messrs. J. H. Pinnock and E. W. B. Hutt, clerks in the Works Department; (4.) Mr. F. Horwood, travelling time inspector; (*b*) That Mr. G. Wise, principal assistant in the building branch of the Works Department, be severely reprimanded; (*c*) That the Committee be authorised to take the necessary steps for filling up the vacancies caused by the dismissal of the officials referred to."

The General Purposes Committee had brought up an urgency report in which they recommended that the services of Mr. Thomas Holloway, as Manager of the Works Department, be dispensed with as from December 1, 1896, and stating that in consequence of the recommendation and in view of the great urgency for filling up the vacancy, they had further to report that they had appointed a Sub-Committee to consider and report what changes (if any) should be made in the management of the Works department.

Dr. Collins, Chairman of the General Purposes Committee, stated that the names of the Sub-Committee referred to in the last paragraph of the report were as follows:—Messrs. Bull, White, Ward, Antrobus, Dickinson, and Burns.

The Earl of Dunraven moved an amendment to omit the last paragraph of the report, on the ground that the matters proposed to be dealt with were too serious to be relegated to a Sub-Committee. In his opinion the notorious matters disclosed by the investigation of the Sub-Committee of the Works Committee were of such a serious character that the demand was not only justified, but he considered that the most critical and close investigation that it was in the power of the Council to create should be made. Public dissatisfaction with the Works Committee had showed itself plainly throughout London. If it was true that the whole profit was obtained on one kind of work and the loss on another kind of work, to make out to the public that the whole department was worked at a profit was to perpetrate a gross deception on the public of London. What he wanted to know was—what was the origin and motive of it, and how it was that such a conspiracy was allowed to flourish such a considerable time. This was, in his opinion, a matter which ought to be inquired into to the very dregs.

The Earl of Denbigh seconded the amendment. He appealed to all sensible members of the Council to appoint a stronger Committee to probe this system of irregularities to the very bottom, in order to see exactly where they were.

Mr. Boulnois, M.P., thought it inadvisable that any member of the Works Committee should be elected upon the Sub-Committee. The Council had lost all confidence in the Works Committee, and he also thought the public were losing confidence in the Council. They had to get to the bottom of these scandals. Did any one believe that these subordinate officials did all the "cooking" of the books which was to the advantage of the Works Department? There must have been an instigation, and a thorough investigation into the circumstances should be made. An impartial inquiry into the Works Department itself was required to discover whether the Department was at all to the advantage of the ratepayers.

Mr. John Burns, M.P., thought the speeches they had heard that day from the Moderates showed that what they wanted was the abolition of any Works Committee at all. The Works Committee was no scheme by one man, but one which was formulated by a body from the Council, and also a scheme which was adopted by Manchester, Liverpool, and Glasgow. The Department was started by the suggestion of one of their own officials, because a ring of contractors had been formed against the Council. It was not true to say that the Department had failed to make a profit on high-class work.

Sir John Lubbock, M.P., said they were forced into the creation of that Department, it was said, because of a ring of master builders, but he did not think the suggestion worth much. The report showed that the Works Committee themselves had not grasped the whole of the case. They had undertaken a number of works before the Department was instituted, and they knew that these works were carried out at 6 per cent. below the architect's estimate. These works had been done at 23,000*l.* below the estimate, whereas the Works Committee were only 5,000*l.* below the estimate, and they would have them believe that was a profit. On the contrary, it was a loss of 18,000*l.* The Works Committee had already cost them over 30,000*l.* They took the works where the profit was to be made, and considerable allowance was to be made for the fact that they had the plums out of the cake. He believed the Works Committee had done the work to the best of its ability, but he held that the policy of doing their own work was a mistake.

Mr. White said they wanted an inquiry into the proceedings of the Works Committee. He had there a return of forty works at present in hand, and though not one of them was finished, about thirteen at the present moment showed a distinct loss of 12,500*l.* The returns were made to the Works Committee the previous day. They did not show the total loss, for this was a sort of interim report, and there was no knowing to what extent it might run. When the figures were published the demand for an inquiry would come not merely from the Council, but from the public. One of the works that had not yet been reported—though it ought to have been, but had been held back for a long time on account of the serious loss that had resulted—was that of Colney Hatch, which alone represented a loss of 6,000*l.* What had become of the 5,000*l.* profit shown on the sheet? They were always told that they were great at building sewers, but the Hammersmith sewer in this account showed a loss up to date of 3,300*l.* They were also great at artisans' dwellings, but one little job alone in this list showed an excess of cost over estimate of 2,000*l.* Another job, which was Mr. Burns's pet, was the wall on the Embankment under Charing Cross Railway Station, which was already 170*l.* beyond the estimate, and was not yet finished. When the return came before the Council they would have something very serious to face, and the getting rid of a manager and other officers would not save them from a loss that would tell on them for the next two or three years.

Mr. Ward, Chairman of the Works Committee, held that it was most unfair for Mr. White [to make use of interim reports to give the impression that large losses had been made where, as a matter of fact, it might turn out that there were considerable profits. The "extra work," of which there was plenty, had not been allowed for by Mr. White. The estimates alluded to by Sir John Lubbock were made up in a very different way from that now employed. They used to be made out in rough form, but now they were made as near as possible to the contractor's price. The apparently low average of the contractors' prices in the only list that had been calculated, was simply the result of two blunders made by contractors tendering absurd prices for two large jobs, in one of which the contractor failed. What hope was there for the work of their Department if, in addition to dismissing all their present heads, the Council refused to give them new ones until a Royal Commission had sat to report on the facts of the case. In consequence of the treatment shown to the Department, the lives of their officials had largely been spent in answering questions and drawing up reports to the Council.

Mr. Roberts said it was essential that London should know they courted the fullest public inquiry. If they instituted a special inquiry the public must see that they realised the position, and were eager to have the whole matter cleared up. He was in favour of a Works Department, but he was quite ready to accept Lord Dunraven's proposition that if the Works Department did not pay it should cease to exist.

Dr. Collins said the intention of the Committee was merely to perform its duties within the terms of the reference to it. He would accept the suggestion of the noble Earl.

The Report was then formally adopted.

The Report of the General Purposes Committee on the subject of the irregularities was next taken. The first recommendation was agreed to after an amendment to allow Mr. Ruddle to resign had been defeated. A similar amendment was moved on the next recommendation, but, seven o'clock having been reached, the consideration of the matter was adjourned.

Schedule of Prices for Jobbing Works.—The General Purposes Committee reported as follows, the recommendations being agreed to.

"On July 28 last we reported that the Works Committee had pointed out to us that owing to the advance of the rate of wages granted to bricklayers from May 1 last, to carpenters and joiners from June 1 last, and to plumbers and smiths, fitters, &c., from August 1, it would be necessary to increase the percentage in the case of certain items in the schedules of prices for jobbing works, and, on our

recommendation, the Council passed the following resolution:—'That the rates per cent. allowed above the schedules of prices for jobbing works be respectively increased by 2½ per cent. as regards bricklayers' work as from May 1 last; as regards carpenters' and joiners' work as from June 1 last; and as regards plumbers', smiths', and fitters' work, as from August 1 next. The engineer, architect, and valuer have now pointed out that the carrying out of this resolution would involve minute inquiries and strict divisions of all the accounts, entailing great labour and with no certainty of an accurate result, and they have suggested that, instead of 2½ per cent. being added to certain items only, 2 per cent. should be added to the total amount of all the jobbing accounts. They consider that this would be a practical and easy method of making the calculations, and that the result would not materially differ from the addition of 2½ per cent. to the items specified in the resolution above quoted. We concur in this suggestion, and accordingly recommend —(*a*) That the resolution of the Council of July 28 last be rescinded. (*b*) That the rates per cent. allowed above the schedule of prices for jobbing works be respectively increased by 2 per cent."

The Council adjourned at half-past seven o'clock.

Illustrations.

THE TIFLIS THEATRE.

As we have had occasion to mention, there is just now some activity in theatre construction throughout Russia, and at the present moment the Kiew theatre competition is attracting the attention of architects throughout the Czar's dominions. Of the buildings lately completed, the theatre at Tiflis in the Trans-Caucasus, which was inaugurated at the beginning of this month, is perhaps the most important. It is a municipal institution, to which the Imperial Government has latterly contributed, and takes the place of a structure which was destroyed by fire. The design is the result of a competition held as far back as 1878, in which Professor Victor Schroeter, to whose work we have had frequent occasion to refer, was the successful competitor. His plans have since been practically adhered to, though no less than four architects have successively been entrusted with the execution of the building, viz., Messrs. Stern, Simonson, Salzmann, and Chirukiewitch. We are indebted to Professor Schroeter for the loan of the perspective illustrated, as well as for some of the particulars, and we have further to record our indebtedness to Mr. P. Stevens, the English Consul at Batoum, for details in respect to dates and cost. As regards the latter, the original estimate for the structure was about 38,000*l.*, but this has been materially exceeded, for the total cost up to October last was 850,000 roubles, or, approximately, 90,000*l.* The building stands on an important site, which cost about 15,000*l.* The accommodation afforded is small, the audience being estimated at 1,350, whilst in its cubic content the block is about half as large as the Palace Theatre of Varieties, which was originally built to hold an audience of 2,300. In respect to the plan, it is mainly remarkable for the unusual lines of the auditorium, and besides this, the area has its front seats considerably below street level, while the back rows rise steeply behind one another until they reach the first tier. The curve and rake of the ceiling are also most unusual, and the boxes at the side are of an unusually small depth, allowing for only three rows of seats. The grand staircase, with its central disposition, is very effective, though the accommodation afforded by the minor staircases is manifestly insufficient, and the curved pass stairs are unfortunate in plan. It may be well to add that the principal dimensions of the proscenium opening are 42 ft. by 36 ft., and the depth of the stage is 79 ft.

In the design of the elevations it is a matter for congratulation that Professor Schroeter, perceiving how well the national architecture of his country lends itself to this class of building, has refrained from introducing foreign or classic elements. Of course the effect in this class of work is principally obtained by an extensive use of colour, in rather crude reds, yellows, blues, &c.

HEADQUARTERS FOR 18TH MIDDLESEX VOLUNTEERS.

These headquarters are to be built on a site purchased by the 18th Middlesex Volunteers in the Harrow-road. The part of the building shown by the drawing contains the canteen, staff rooms, officers' and sergeants' mess rooms, with kitchen and caretaker's rooms on the top floor. Behind is a drill hall 90 ft. by 50 ft., with small drill-room, stores, lavatory, and bath-room accommodation. Mr. Halsey Ricardo is the architect.

SKETCHES IN SCOTLAND.

DYSART TOLBOOTH.

Dysart is an ancient Fifeshire port on the Firth of Forth, and in the sixteenth century it was raised to the dignity of a royal burgh, and still retains some signs of its former prosperity. The town hall, although partly blown up by Cromwell's troopers, still retains its massive old tower or "tolbooth," generally known as the "Town Clock." The belfry shows stone on the face, but the tower is rough cast, the whole being picturesque and in harmony with the surroundings.

PITTENWEEN CHURCH.

In 1588 some portion of the buildings and ground of an old monastery were granted to the burgh, for the purpose of erecting a "decent, honest, and comely kirk," and shortly afterwards the work was carried out. The spire is certainly a Scotch ecclesiastical feature; and the tower, with its corbelled upper story in stone and plain rough cast work below is in keeping with the domestic work of the period. The church itself seems to have entirely changed its character through restoration; but the tower and spire remain quite uninjured.

ST. MONANS.

This church, which was endowed in 1369, looks most picturesque from the sea shore, with its steep-roofed chancel and transept, its stumpy tower and octagonal spire, the whole in architectural consistency so uncommon in a Scottish village church. The interior strikes one on entering with its lofty effect of ribbed roof and general air of good keeping. You can picture the effect in this fine old interior, with its quaintly-dressed fishing community gathered together at a thanksgiving service, the walls of the chancel adorned with their brown fishing nets; the whole having an old-world appearance, as if unchanged for centuries.

DETAILS FROM STIRLING.

The architectural student visiting Stirling will find much that will repay him for his trouble, even if he has only time for jottings. The castle has many quaint little outlines, as shown on the sketch, and close at hand you have Argyle Lodging, which is probably the finest specimen of an old town residence in Scotland. The windows are adorned with carved pediments, which have simple mouldings, and some with the interlacing ornament so characteristic of the seventeenth century in Scotland.

John Watson.

DETAIL OF DOORWAY, No. 52-53, PARLIAMENT-STREET.

This is the doorway of the front, designed by Mr. H. Huntly-Gordon, which is represented on another page as No. 8 of our sketches of London Street Architecture. It shows the character of the terra-cotta detail employed in the building, which is elaborate and important, and could only be approximately indicated in the general sketch.

CASKET: SILVER AND ENAMEL.

This casket, in beaten silver and enamel, was exhibited in the sculpture room at the last Royal Academy, under the names of Nelson and Edith Dawson. The casket was ordered for presentation to Lord Glenesk by the Plumbers' Company. In regard to the work and some of the difficulties which it presented from an artistic point of view, Mr. Nelson Dawson writes:—

"I prepared two designs, which were submitted to the Company, and, it is needless to say, that they chose the one that looked the best on paper—furthermore imposing such conditions as the placing of their bronze medal in the centre of the lid—a difficulty I escaped by arranging for the badge of the Company, 'St. George and the Dragon,' to be modelled and cast as a small group surmounting the whole. There were also several uncompromising words—worthy in themselves, but dispiriting artistically—'Examination,' 'Sanitation,' and others, that I received instructions to introduce into the design, this being overcome by relegating them, in fine, bold, and readable type, to an interior leaden box, which, being a piece of absolutely technical work illustrating the plumber's craft, they somewhat embellish.

The heraldic devices were also trying, as the arms of both donors and recipient are a mass of detail, no jot of which may be omitted. The old artists dared to take more liberty with these things, but nowadays it must not be attempted, and the designer of to-day, if he have a coat-of-arms to deal with that is full of detail, must reduce the rest of his design to the same crowded condition to avoid contrast. In turning over the illuminated parchment folios at the College of Heralds, in order to ensure accuracy in the enamelled English shields in the front of the casket, however, I found some compensation—in the fifteenth and sixteenth centuries heraldry and artistry were still twin products.

The enamels may be described as mainly translucent over gold—the white and black being, of course, opaque. The whole of the body of the casket is of beaten and forged work, and was about four months in the actual making, we preparing the enamels in our studio while the other parts progressed in the workshop. It proved most interesting throughout, owing to the fact that it was being made entirely by 'hammer and hand.'

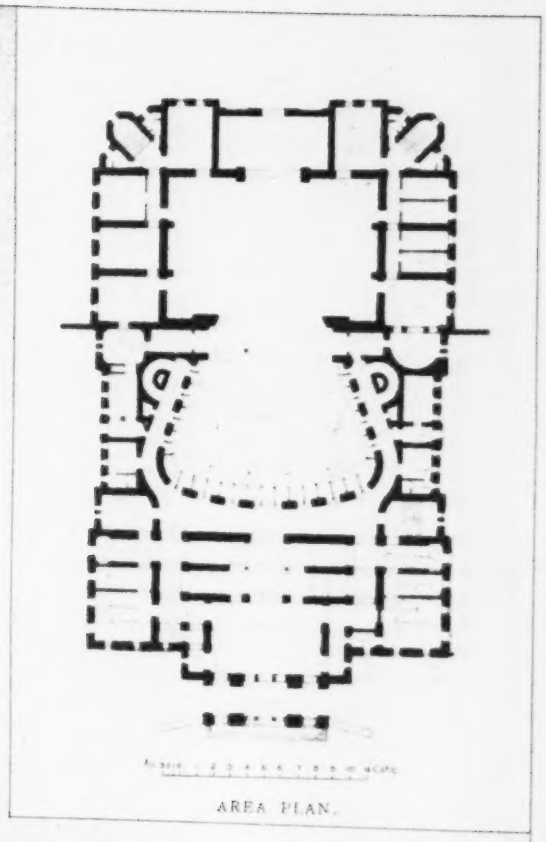
Finally, when casket and enamels were ready, Mr. Pomeroy's small group, which he had modelled and had cast in *cire perdue* silver, was added and rivetted in position."

We may congratulate the Plumbers' Company on their having taken the wise course, which we have recommended over and over again, of going to an independent artist to make an original design for a ceremonial article of this kind, instead of taking the ordinary course of ordering it from a tradesman. The result is that they have got a work of real artistic interest and value, which the Royal Academy thought worth a prominent place in their exhibition, and which we are very glad to have the opportunity of publishing. It is to be hoped that other bodies which require such things will follow the example of the Plumbers' Company, and presentation caskets will then be worth illustrating, which has seldom been the case hitherto.

ARCHITECTURAL SOCIETIES.

Carlisle Architectural, Engineering, and Surveying Society.—The first meeting of this Society this session was held in the town hall on the 3rd inst., when the Presidential address was delivered by Mr. F. J. Nickols, C.E. After briefly referring to the present satisfactory position of the Society, and the advantages to be derived from the friendly intercourse of the members of the three allied professions of architecture, engineering, and surveying, he touched upon the competition of other nations with Englishmen, particularly the Germans, and strongly insisted upon the desirability and great utility of a thorough scientific as well as practical training for the members of each profession. Rapid strides were being made in the perfection of many of the present sources of power, and in the course of a few years a marked change would take place in some of our methods. A vote of thanks was passed to Mr. Nickols at the conclusion of his address.

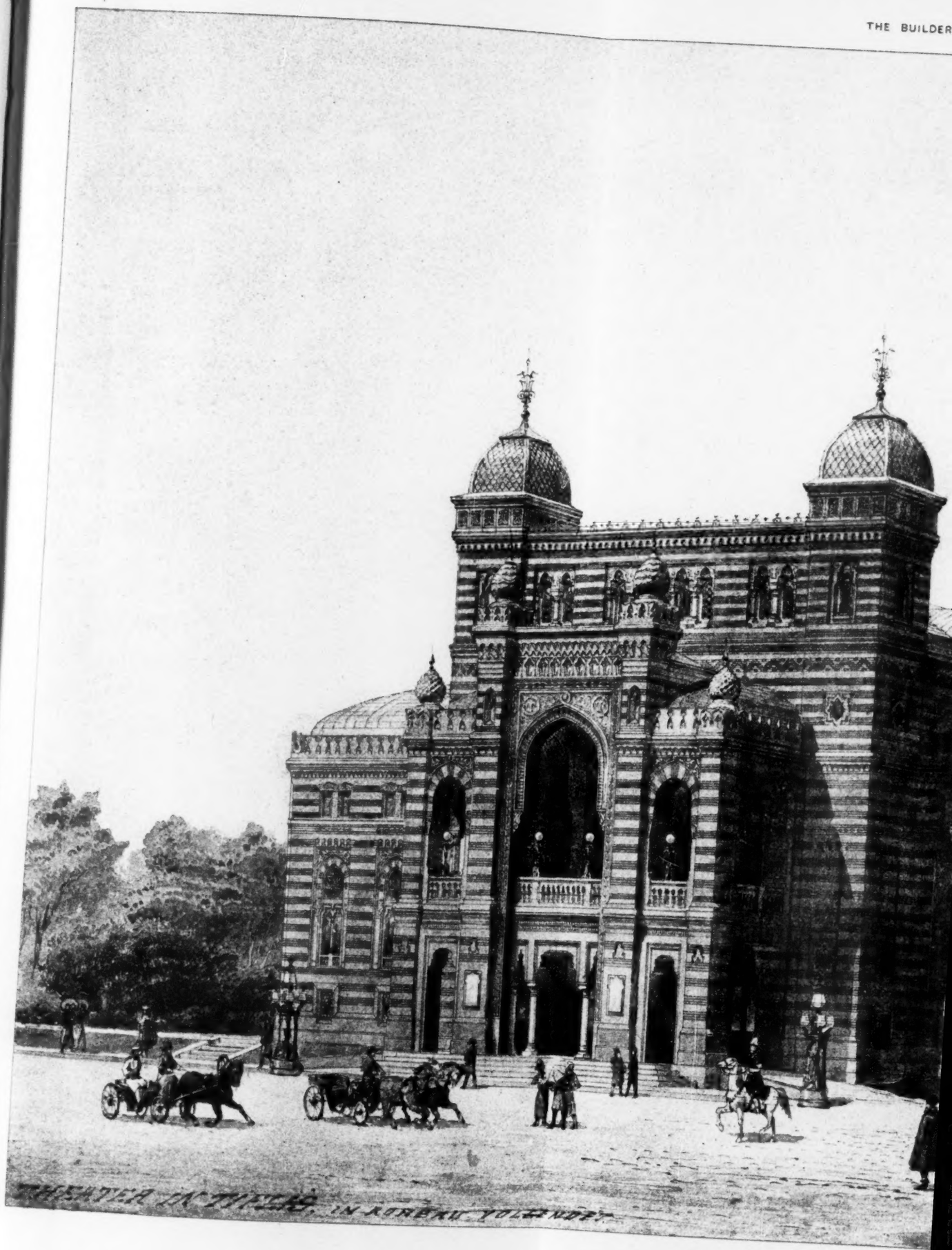
Devon and Exeter Architectural Society.—The inaugural meeting of the winter session of the Plymouth, Devonport, and Stonehouse Branch of the Devon and Exeter Architectural Society took place on the 12th inst. at the Plymouth School of Art, Princess-square. The Chairman of the District, Mr. Charles King, presided. Mr. B. Priestley Shires delivered the first of a series of lectures that has been promised by several members of the architectural profession. The subject of Mr. Shires' lecture was "The Domestic Life of the Edwardian Period, as shown by its Arcitecture, Manners, and Customs." It was illustrated with measured drawings, monographs, and sketches. Mr. Shires said the Edwardian period of art and architecture was, perhaps, one of the most brilliant and flourishing epochs in English history. The people not only enjoyed peace and prosperity, but made rapid progress in civilisation. It was exactly for this period, and no longer, that the Decorated style prevailed. Many of the houses were of large extent, and great magnificence, and testified to the wealth and prosperity of their owners. Having described the general arrangement of a house of this period, the lecturer went on to speak of the manners and customs then prevailing. He concluded by describing the state of public roads, and details connected with the domestic life of the times. A vote of thanks was accorded to Mr. Shires for his lecture on the proposition of Mr. Parker, seconded by Mr. Princhard. Notice was also given by a member



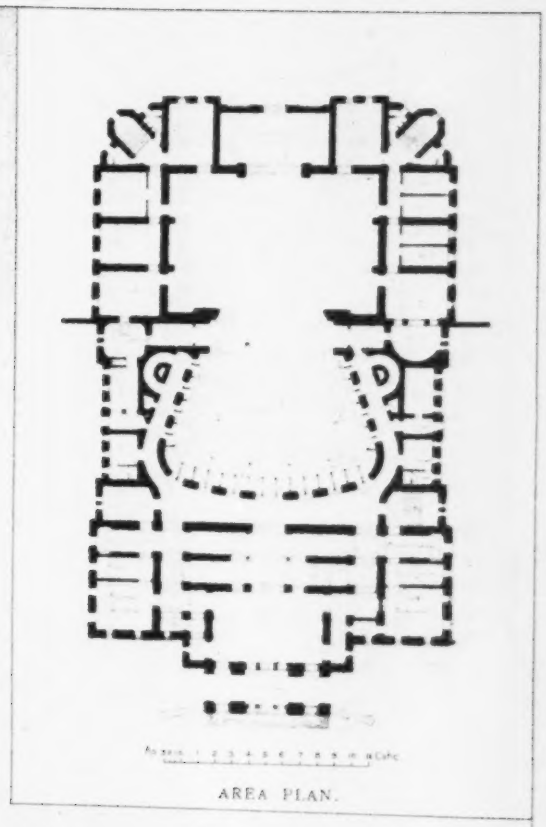
AREA PLAN.

PHOTO. SPRAGUE & CO. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

VICTOR SCHROETER, ARCHITECT



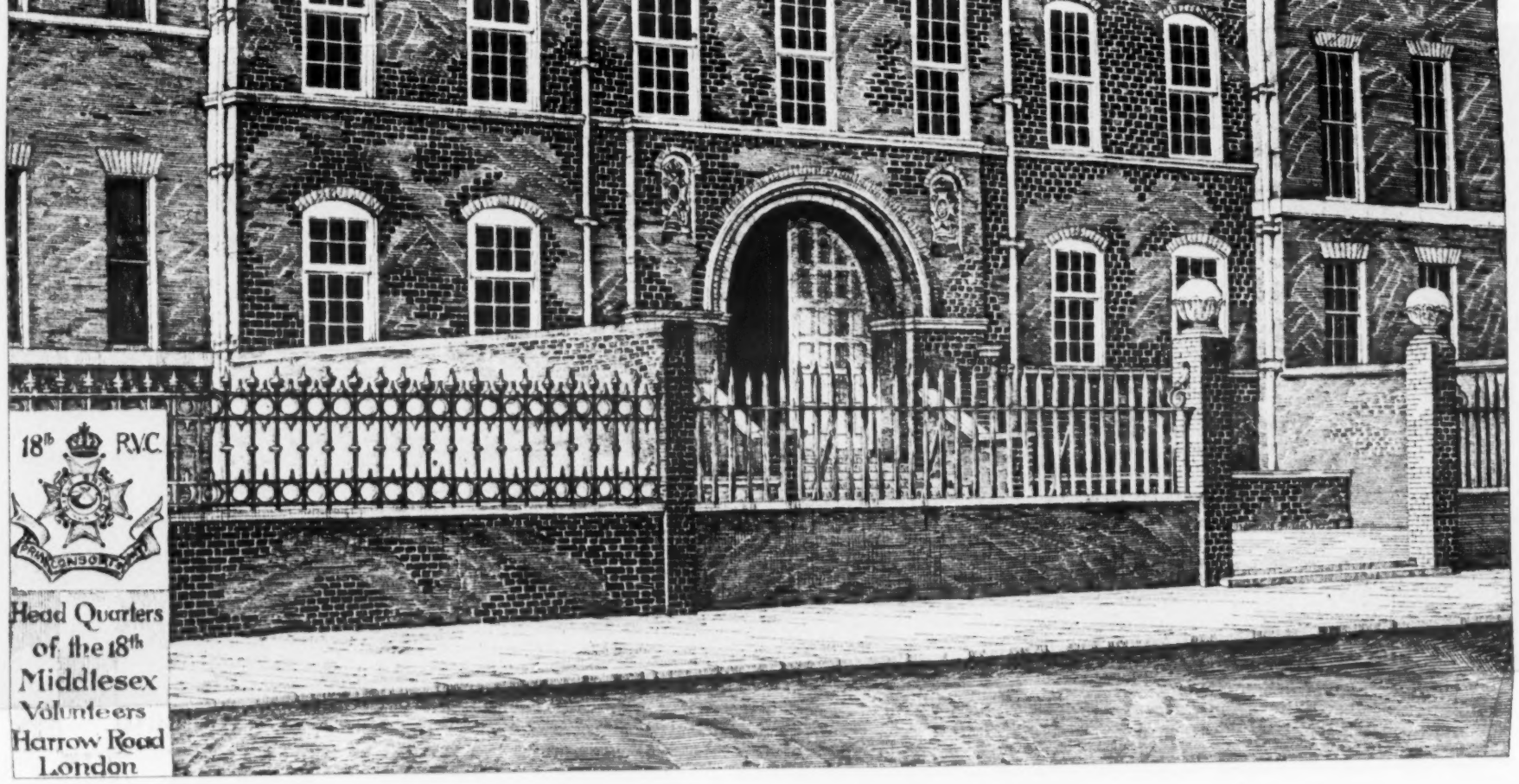
THE MUNICIPAL THEATRE AT TIFLIS (CA



AREA PLAN.

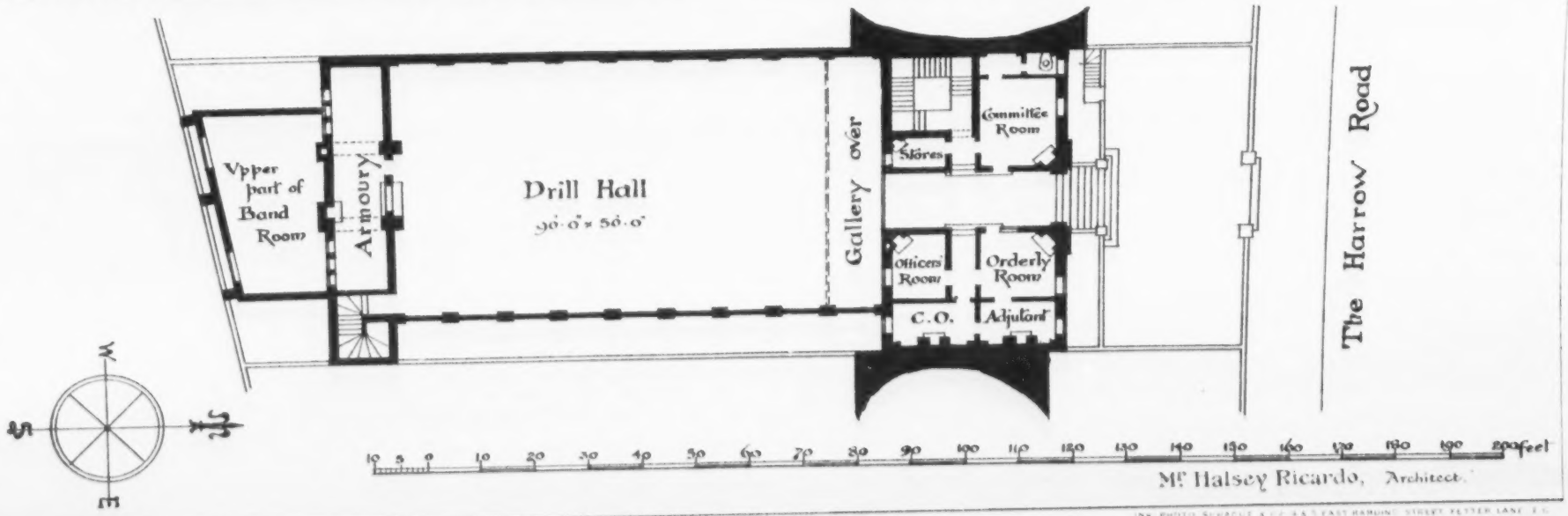
INK-PHOTO, SPRAGUE & CO. 4 & 5, LAST HARDING STREET, FETTER LANE, E.C.

TIFLIS (CAUCASUS).—M. VICTOR SCHROETER, ARCHITECT



18th R.V.C.

Head Quarters of the 18th Middlesex Volunteers Harrow Road London

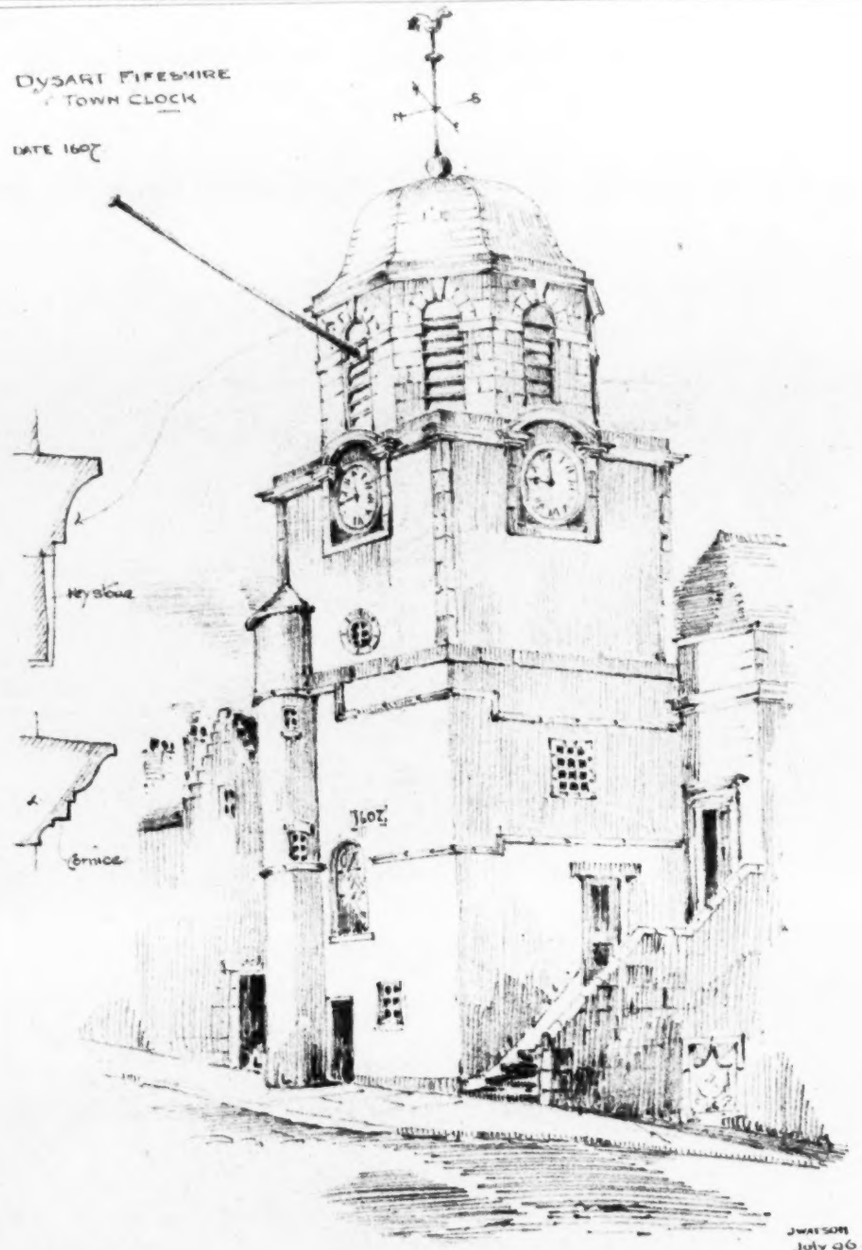


Mr Halsey Ricardo, Architect.

INK PHOTO SERVICE LTD 44 & 5 EAST HARDING STREET FETTER LANE E.C.

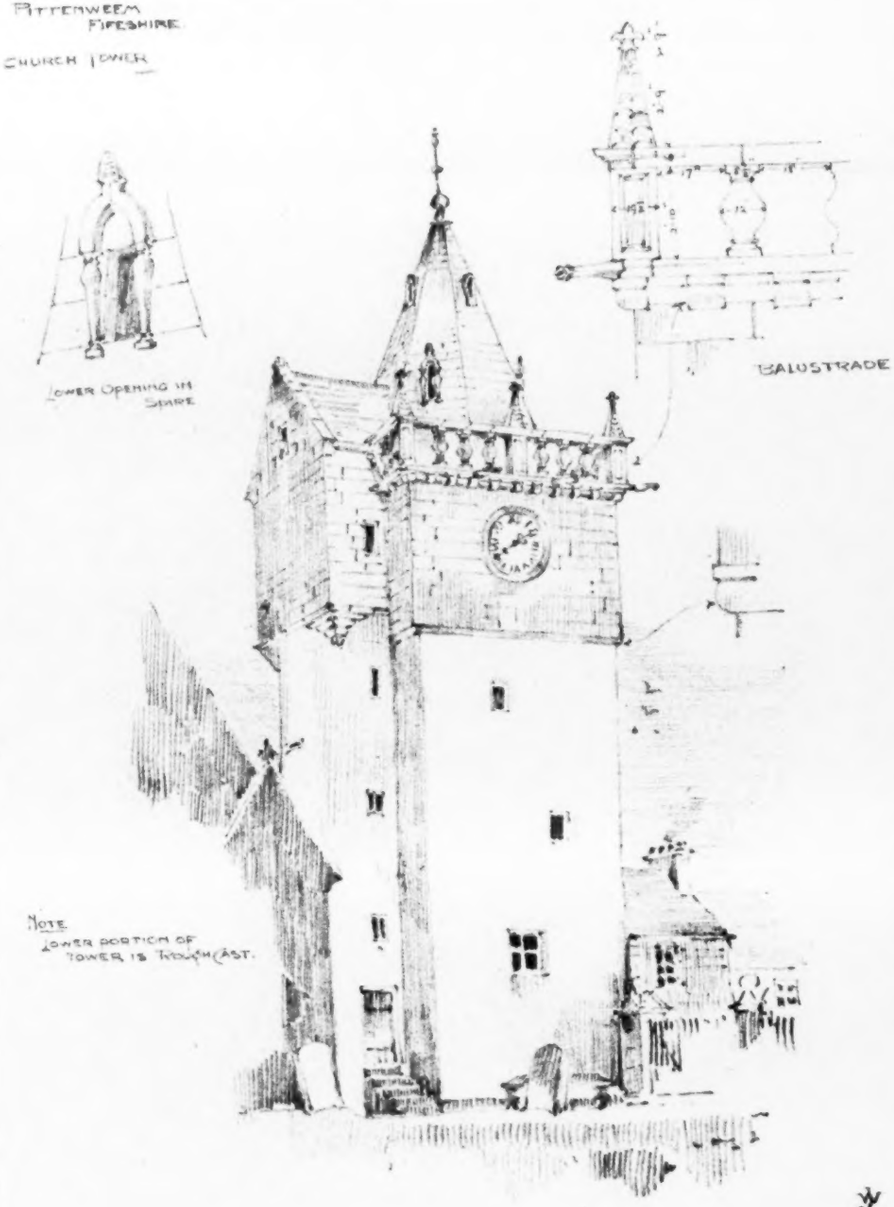
DYSART FIFESHIRE
TOWN CLOCK

DATE 1607

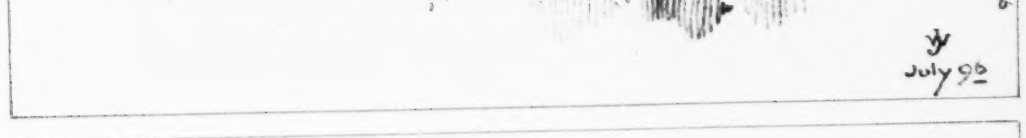


PITTENWEEM
FIFESHIRE

CHURCH TOWER



July 96



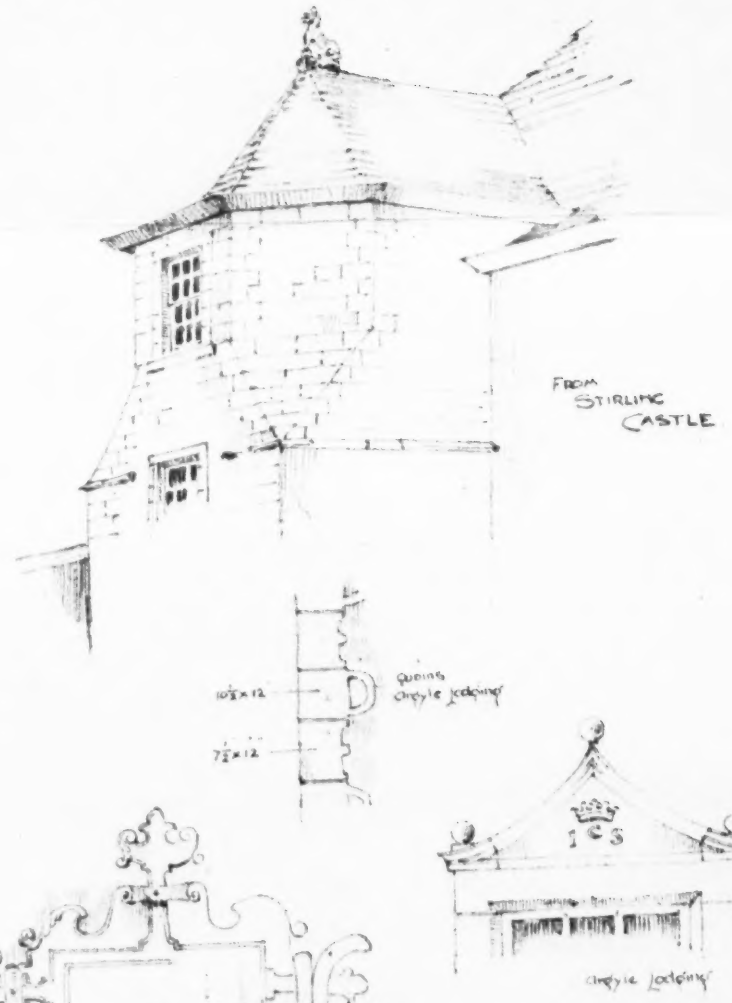
July 96

ST MONANS
FIFESHIRE.

July 96

42

DETAILS FROM
STIRLING.



Window Head Argyle Lodging

1632

July 96

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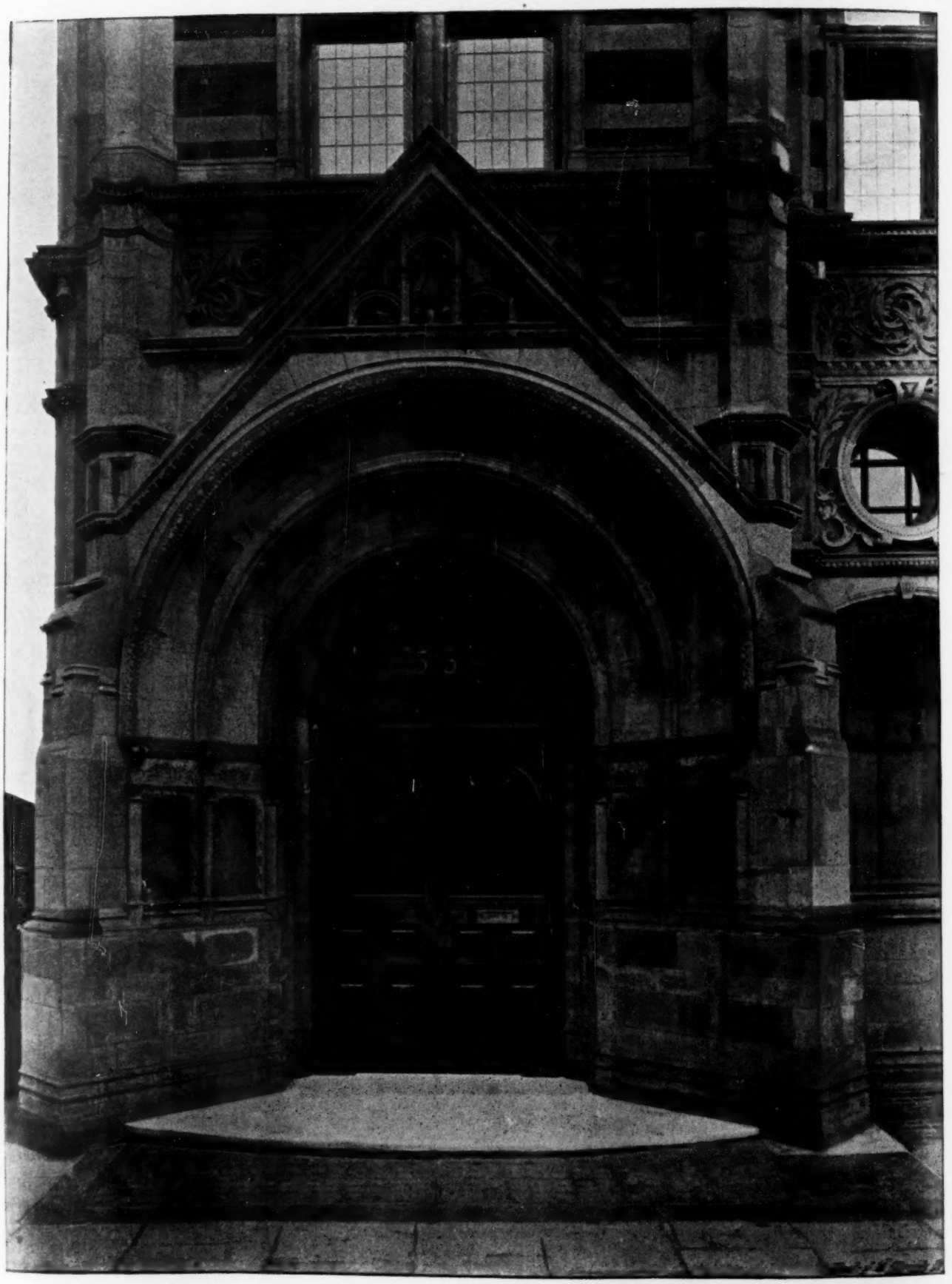
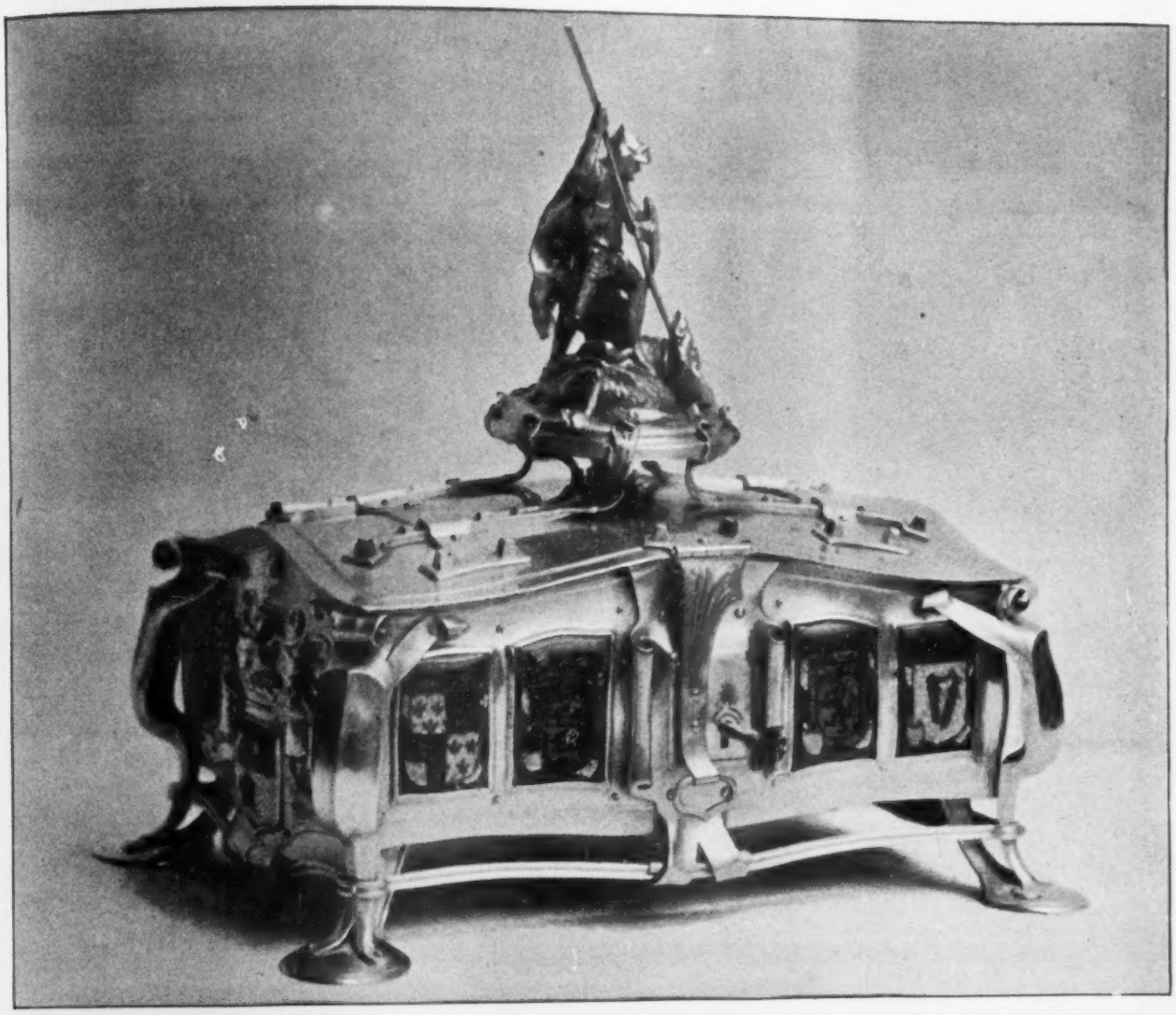
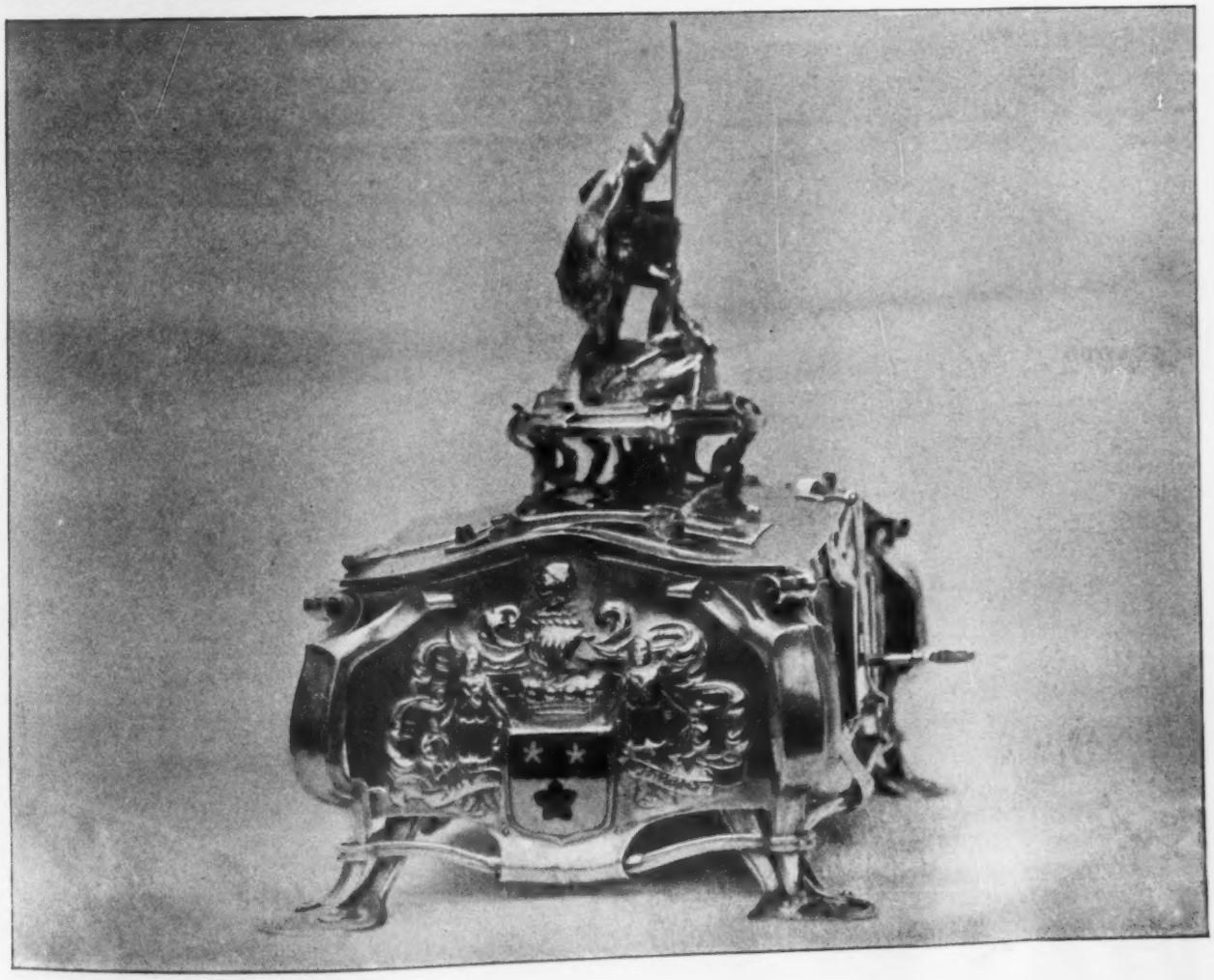
INK PHOTO SPRAGUE & CO 8 & 9 EAST HARDING STREET FETTER LANE E.C.



DETAIL OF DOORWAY, Nos. 52-53, PARLIAMENT STREET.—Mr. H. Huntly-Gordon, F.R.I.B.A., Architect.





CASKET: SILVER AND ENAMEL.—By NELSON & EDITH DAWSON.

that at the next meeting he would propose that some action be taken *re* public officials competing for private work.

NORTHERN ARCHITECTURAL ASSOCIATION.—On Wednesday the President of this Association, Mr. Archibald Dunn, read his opening address, the subject of which was "An Ideal Architect," whom he described as one who must be an artist, a constructor, and an engineer. In regard to the latter point he instanced some of the extraordinary engineering feats accomplished in connexion with ancient architectural monuments, the conveyance and setting up, for example, of the huge single blocks found in some Egyptian buildings and in the temple at Baalbek. He also advocated a practical or working acquaintance with trades, especially carpentry.

ARCHÆOLOGICAL SOCIETIES.

EGYPT EXPLORATION FUND.—This Society held its annual meeting on Friday last week at the rooms of the Zoological Society, Hanover-square, Sir E. Maunde Thompson occupying the chair, in the absence of Sir John Fowler, the President. The Report of the Treasurer showed that the Society's funds were in a better state than last year, although unfortunately there was still an excess of expenditure over income. In the report by Miss Paterson, the Secretary, it was observed that there was an important piece of work still to be done at Deir el Bahari, in replacing the fallen sculptures. Mr. Somers Clarke had undertaken to superintend the preservation of the monument, at which the artists in connection with the fund were still at work. The Chairman referred to the loss which they would sustain by the appointment of Mr. Hogarth to the Directorship of the British School at Athens. His place, however, will fortunately be taken by Mr. Flinders Petrie, who was present and addressed the meeting, commenting on the solid contribution which archæological studies had given to our knowledge of ancient history; Egyptology especially having been the means of formulating a reasonable and fairly accurate chronology of the earliest period which could be called historical. He dwelt on the need for increased energy in exploration, in view of the rapidity with which ancient remains were perishing; and in Egypt one could expect no assistance from the native administration, which took no interest in antiquity. In the work which he proposed to do next year he hoped to throw some new light on the period of the Libyan invaders, about 3,000 B.C., and to make some important additions to Egyptology.

ENGINEERING SOCIETIES.

LIVERPOOL ENGINEERING SOCIETY.—On the 14th inst. about fifty members of the Liverpool Engineering Society, including Mr. S. B. Cottrell, the President, visited the works connected with the Water Department of the Liverpool Corporation in Pall Mall. The visitors were welcomed by Mr. Parry, the water engineer, who explained to them the working of the various appliances of the department. The works comprise upwards of a dozen sub-departments, one of which consists of a standard sample room, where the retention of specimens of bricks and other material enables the authorities to at once ascertain whether work done by private contractors is up to the recognised standard. A vote of thanks was afterwards accorded to Mr. Parry.

COMPETITIONS.

WESLEYAN SUNDAY SCHOOLS, BRADLEY, STAFFORDSHIRE.—In the recent competition for new Sunday Schools at Bradley, the Committee have recommended the acceptance of the designs prepared by Mr. R. J. Rowe, of Bilston.

BELFAST CITY HALL.—It is stated that a meeting of the Belfast Council in committee was held at the Gas Works, Ormeau-road, on the 13th inst., to further consider the plans submitted by various architects for the proposed new City Hall. The plans which had been selected by Mr. Waterhouse, R.A., and Mr. Bretland, City Surveyor, were examined by those present, and, after considerable discussion, the plans numbered 30, 42, 43, 22, and 35, were chosen as the five plans to be sent forward to the Corporation for their final decision.

SEWERAGE WORKS, PENRITH.—Messrs. Brierly & Holt, Blackburn, have, by order of the Penrith Urban Council, prepared a new sewerage scheme for Penrith to replace the existing system,

The Student's Column.

RURAL DRAINAGE.—XXI.

Precipitation.

IT has already been said that the impurities of sewage are of two kinds—those in solution and those in suspension. Further, that the latter, consisting largely of foecal matter, are the most difficult to deal with. Where the land for irrigation purposes is plentiful and suitable, the suspended matter may be disposed of with the remainder of the sewage; but extreme care must be taken to prevent the surface of the land from becoming choked with the glutinous matter contained in the sewage, and known as "sewage slime," when proper percolation and aëration become impossible, and the land is "sewage-sick." With sufficient duration of contact with the filtering material and efficient aëration, very small prepared areas will purify large quantities of crude sewage. Such areas are, however, only small relatively, and are often unattainable by rural authorities.

Various processes have been devised, as early as 1762, for separation the suspended matters from the rest of the sewage by means of chemical reagents.

It was at one time believed that the separated matter, or "sludge," possessed a very high manurial value, and that local authorities would be able, by its sale, not only to cover the expense of sewage disposal, but even to make a profit. This belief, which led to innumerable chemical processes for sewage precipitation, and to the waste of enormous sums of public money, has in the end failed before the light of bitter experience. Speaking upon the subject in a discussion at a meeting of the Institution of Civil Engineers in 1887, Dr. Dupré said "that error died hard, and it was a mischievous error that had been propagated that sewage could be made to pay the community. It had done more to retard the proper treatment of sewage than anything else. He came to England thirty years ago full of theoretical notions inculcated by Liebig, who then compared England to a vampire sitting on the breast of Europe sucking out its life blood, and discharging it through its sewers into the sea. He had since become a sadder, and, he hoped, a wiser man, and had come to the conclusion, which he thought most people had reached, that sewage was a nuisance to be got rid of, irrespective of expense or any idea of making a profit out of it. Liebig himself, in after years, came to the conclusion that there was something in the sewage system adopted by England which rendered it impossible to make it of any agricultural use. There was no doubt a great deal of valuable material in sewage, but the difficulty was how to get at it. Many rivers in Europe carried gold, but if a man could earn a penny a day on something else it would not pay him to get gold out of a river. He had calculated that the silver in the sea-water that passed by Southend every year would be worth 36,500,000*l.* All the gold in California and Australia was as nothing compared with the unlimited stream of silver that passed the coast. But who ever dreamt of getting silver out of sea-water? It did not pay. In like manner, Englishmen had adopted for good or evil—he sometimes thought for evil—the water-carriage of sewage, which probably would not be altered in the lifetime of any one present; and the idea therefore, of making sewage pay must be given up. He did not say that there might not be some places where the sewage might be made to pay, but in the great majority of cases it was mere folly to think of making money out of it." ("Proceedings of the Institution of Civil Engineers," Vol. lxxxviii., p. 214.)

Probably a principal cause of the difference between the theoretical and practical values of sewage sludge as a manure is to be found in the antiseptic properties of the chemical reagents employed in precipitation, which delay nitrification, which is an essential preliminary to assimilation by plant life. Precipitation "means the production, by the introduction of chemical substances within the body of the sewage, of certain solid compounds, which, in settling, drag down with them the suspended matters in the sewage, together with a small proportion of the polluting matters which are in solution in the sewage, this proportion varying with the quantity of solid matters deposited." ("Municipal and Sanitary Engineer's Handbook." H. P. Boulnois, p. 268.)

Although in some chemical processes an appreciable reduction is also made in the amount of organic matter in solution as well as in suspension, this reduction may practically be neglected and the effluent considered merely as clarified sewage which must be subsequently dealt with either upon land or by properly prepared filters.

"To enumerate the various methods proposed from time to time for separating the sludge from the liquid sewage would require more time and patience than the recital would be worth when done. The sum and substance of nearly all of them is comprised in the use of lime, either alone or in conjunction with the sulphates of iron and alumina, or of one of both of those salts, alone or in combination with charcoal." ("Dibdin.")

If crude sewage is permitted to rest, subsidence of the matters in suspension will take place to a considerable extent; but the process is slow and putrefactive, decomposition is liable to take place in the meantime. The application of chemical reagents is made with a view to expedite this subsidence.

The substances employed for chemical treatment of sewage chiefly belong to three classes:—

1. Coagulating substances, which entangle the suspended matter, and being heavier than the liquid portion of the sewage, the whole falls as a deposit on the floor of the precipitating-tank. The action of these substances is chiefly mechanical. The process is similar to that employed in fining wine or in clearing coffee with white of egg. Example: alumina.

2. Basic substances, which combine with the carbonic acid present in the sewage, producing insoluble carbonates, which are precipated and carry down the suspended matters with them. Example: lime.

3. Oxydising substances, which part with their oxygen to the organic matter present in the sewage, decomposing the more amenable portions and forming insoluble heavy precipitates. Example: iron sulphate.

These and similar substances are employed singly or in combination.

The most frequently-used precipitant is lime, due largely, no doubt, to its cheapness. Recent investigation has shown that lime can only be used successfully under certain conditions.

It must be exactly apportioned with regard to the strength of the sewage. It should be added to the sewage in the form of lime-water, or if in the form of milk of lime, efficient agitation must be secured, otherwise the greater portion of the lime will be inactive as a precipitant. An excess of lime will dissolve "a by no means inconsiderable quantity of the offensive matters previously in suspension, and this is apt to render the last stage of the liquid worse than the first." Lime produces a bulky sludge containing a large proportion of moisture, and which is very liable to putrefaction or secondary decomposition.

In a typically rural district, the constant attention and concurrent expense which an efficient lime process would entail would render it impracticable.

The application of salts of iron to sewage, either alone or in conjunction with other substances, also requires constant supervision and complicated expensive machinery.

Practically, the only chemical precipitant which can be adjusted to the sewage automatically, and which does not entail complicated machinery, is alum cake, which will be dealt with in detail later.

The form of settling or precipitation tank is a prolific source of discussion at the present moment. An enumeration of the various forms might recall Mr. Browning's "Pied Piper of Hamelin." Large tanks, small tanks, round tanks, square tanks, long tanks, narrow tanks, deep tanks, shallow tanks, upward flow tanks, downward flow tanks, continuous flow tanks, intermittent flow tanks, *et hoc genus omne.*

Rectangular tanks are convenient and economical. They should have cross walls to check the velocity of the body of the liquid contained in them, and should be provided with floating scum-boards. "The bottom of the tank should be segmental in cross-section, the width being about one-fourth of its length, whilst the longitudinal section should show a fall of about 1 in 80, the deepest end being at the inlet; the sludge will be readily removed from the tanks constructed in this manner." (Santo-Crimp.) The tanks should be in duplicate to allow for cleaning, repairs, &c., and the total tank capacity should not be less than 50 per cent. of the total dry-weather flow of the sewage.

Candy & Ives' circular tanks, and Wollheim's radial-flow tank possess advantages for rural work.

The disposal of the sludge which contains from 90 to 97 per cent. of moisture is often a difficult

problem. Usually in the country it can be drawn or pumped directly into barrels and hauled on to the land of neighbouring farmers. If this cannot be done the sludge should be run into settling tanks or porous beds. On standing, a portion of the moisture separates from the rest of the sludge, and in the former case is run off and re-treated in the precipitation tanks, or in the latter case is absorbed by the porous material of which the bed is constructed. This separation may be expedited by the addition of lime, by means of which the moisture may be reduced to 55 to 60 per cent. Another method is to mix road scrapings or house refuse with the wet sludge. These methods render the sludge more portable and less offensive and facilitate its disposal to farmers, &c., occasionally without loss.

The following conclusions were drawn by Dr. Percy Frankland from observations on the practical treatment of sewage:—"As regards the execution of these precipitation processes, the method of subsidence under complete rest—at any rate, as at present carried out—appears to have little to recommend it; for though unquestionably correct in theory, it is difficult in practice to afford rest of sufficient duration for the advantages to come into play; whilst the far greater complexity, both of construction and management, which this method entails are very much against it. In none of the three towns in which this method was in operation was the effluent remarkable for its freedom from suspended matter.

In practice the greatest success is to be anticipated by employing the maximum capacity in a single tank of moderate depth without partitions. In short, let the whole of the available money be devoted to the acquisition of the largest system of tanks of the simplest construction, and requiring the least attention." ("Transactions of the Sanitary Institute," vol. x., p. 276.)

OBITUARY.

MR. F. A. SKIDMORE.—We have to record the death, at the age of 80, of this once well-known art metal worker, whose name was familiar to every one in the high tide of the Gothic revival. Skidmore, as a boy, was apprenticed to his father, a gold and silver smith from London, who had settled in Coventry. When his term of apprenticeship had expired, he entered on the study of ancient metal work and manufacture at home and abroad, and, after his return, he commenced business in Coventry, about 1850 on a very limited scale; but later on he received a large Government order which involved a great amount of forging and working in iron, and soon afterwards a company was formed to take over and extend his business. Extensive buildings were erected in Alma-street, Coventry (afterwards occupied by Messrs. Singer & Co., the cycle manufacturers). In 1862, at the Great International Exhibition, the Skidmore Company were awarded a medal for "progress, elegance of design, and excellent workmanship." The company was afterwards amalgamated with Winfields, Limited, of Birmingham, and Mr. Skidmore left Coventry about twenty years ago and opened an establishment at the Manor House, Meriden, about six miles away; but his hitherto successful career was unhappily interrupted by years of illness, which left him partially blind. Owing to this misfortune he became very reduced in circumstances, and in 1894 a committee, consisting of the Mayor of Coventry (Alderman Singer), Sir Henry Acland, Mr. J. Oldrid Scott, and others, raised a fund to aid him in his declining years. Mr. Skidmore's artistic work is to be seen almost everywhere; examples of it are found in no less than twenty-four Cathedrals, including those of Canterbury, York Minster, St. Paul's (London), Westminster Abbey, Durham, Hereford (a very notable screen of wrought metal, mosaics, onyx, and other precious stones), Lichfield (a chancel screen enriched with bronze figures, and made from the designs of Sir Gilbert Scott), Chester, &c.; also in the Archiepiscopal Palace at Lambeth, St. Giles' (Edinburgh), St. Mungo (Glasgow), at Calcutta, and at Grahamstown, South Africa; also in St. George's Chapel, Windsor, St. Nicholas', Antwerp, St. James', Philadelphia, a church at Valparaiso, and at St. George's Church, Demerara. His works are also to be found in 300 or more parish churches all over the country; in fifteen colleges, including no fewer than eight at Oxford, six at Cambridge, and Glasgow University. Some fine examples of his secular work can be seen in sixteen town halls, Government offices, twenty-one castles, courts, and mansions, among the most notable being those of the Royal Exchange, Liverpool; Colston Hall, Bristol; Peel Park gates, Manchester; Imperial Hotel, Malvern; India Museum, London; Errol Park gates, Dundee; a fountain at Greenock; and the magnificent wrought-iron entrance-gates to Eaton Park, the Cheshire seat of the Duke of Westminster. He also carried out the canopy to the Albert Memorial in Hyde Park. The whole of this canopy was made at Mr. Skidmore's Coventry works, and under his personal supervision, prior to its erection over the statue. Concerning this, one of the richest monuments existing, the architect, Sir Gilbert Scott, wrote in his autobiography: "For the execution of this metal work (comprising more than half of the monument) the only man in the world to my knowledge to carry out my ideas was Mr. Skidmore, of Coventry, and he has done it."

GENERAL BUILDING NEWS.

GROSVENOR HOSPITAL FOR WOMEN AND CHILDREN, WESTMINSTER.—It is hoped that this hospital, of which the foundation stone was laid in July by Lady Kortright, will be ready for opening by the Princess Louise next season. The building is at the corner of Vincent-square, Westminster, and when completed will consist of a well-lighted half sunk basement, the walls of which are built in glazed bricks with a dado 5 ft. high, in a darker colour, all floor angles being rounded in corridors or apartments where dust would be likely to accumulate or be secreted. The first floor, with corridors laid in mosaic, will be devoted principally to the executive and nursing staff, whilst the two upper floors will be devoted entirely to the sick wards. There will be twenty-six beds, and on the top floor a small theatre or operating-room with every kind of improved fittings. Being a special hospital, as also a paying one, the Building Committee have arranged that some of the wards shall be single ones for one bed, whilst the others are planned for three, four, or five beds. The two staircases are of stone, and in the centre of the main one will be a well, up which a passenger-lift is intended to be erected, whilst a dinner) have soiled linen shoot, and dust shoot (externaldings, been arranged for. Internal cornices, mouldings, and ledges, calcufated to receive depcsits of dust, have been carefully avoided. At the rear is the newly-erected out-patients' department, in design and material similar to the building in course of erection. The accommodation here is a waiting-hall, a ladies' office, dispensary, surgeons' and physicians' rooms, and two dressing-rooms, with accessories for patients and staff, communication with the main building being provided. The floors are laid with the Acme Patent Silent Wood Flooring Company's material. The roof is a lead flat, and the whole building is self-contained and well lighted, and warmed by hot-water arranged and executed by Messrs. Wilson & Sons, who will also carry out the warming and cooking arrangements to the main building. Messrs. Roumieu & Aitchison are the (honorary) architects.

U.P. CHURCH, STRANRAER, N.B.—The foundation-stone of the new church which is in course of erection by the Ivy Place United Presbyterian congregation, Stranraer, was laid recently. The building occupies the site of the cld church in London-road. The roofs will be covered with sea-green slates finished with red ridge tiles, and the roof of stair turrret covered with dark red tiles. The main gable faces the street, the principal entrance being in the centre by a double doorway. On each side are mullioned windows, with traceried heads, lighting the vestibule. Over the main entrance and lighting the end gallery is a five-light window, the upper part filled with tracery; the flanks of the gable in line with this are also enriched with cusped panelling, and in the upper part of the gable is a moulded niche over a carved corbel. On the western side of the main gable the gallery staircase is carried up in an octagonal tower. The side elevations are in keeping with the front, having a series of two-light windows in the lower portion, and large four-light windows with traceried heads in the upper, the windows next the pulpit end being carried up to a much higher level under the transept gables. In the interior, the church will be divided into nave and side aisles by stone piers and arches; the piers also carrying the galleries, which are placed behind them at the sides, and supported on steel girders. The roof construction will be mostly exposed and of dressed timber, the ceilings all wood lined. A pulpit recess is formed at the south end of the church, with stone columns and a moulded arch over it, and the upper part has a traceried three-light window intended to be filled with stained glass. The sittings provided are for 530 persons. The hall is intended to seat about 300, while the large session-house can also be opened into it when required. There are also provided a ladies' room, vestry, kitchen, and heating-room, with cloakroom and lavatory accommodation. The total cost of the building will be about 4,000*l*. The architect is Mr. John B. Wilson, of Glasgow; and the following are the principal contractors:—Mason, D. Purdie, Stranraer; wright, D. Milligan, Ayr; plumber, J. Johnstone & Son, Glasgow; plasterer, James Torrance, Stranraer; slater, William Auld & Son, Ayr; glazier and painter, S. Kemp, jun., Hamilton.

PROPOSED PUBLIC BATHS, LEITH.—It is proposed to erect at Leith new public swimming baths. The plans of the baths are designed to provide a swimming bath 75 ft. in length by 35 ft. in breadth, with a depth of 7 ft. at the deepest part, and 3 ft. at the shallowest part. Around the same there is a platform, flanked by twenty-two dressing boxes on the one side and nineteen dressing boxes on the other, with an attendant's room at the farther end of the bath. At this end of the swimming bath there will also be a diving stage and stairs up to the gallery, which will be constructed along both sides of the swimming bath, and from the ceiling of the dressing boxes. At the shallow end of the swimming bath is situated a douche-room, having an area of 22 ft. by 11 ft. There is a stair which leads to the large platform and gallery above those apartments. The dimensions within the walls of the swimming bath are 100 ft. by 56 ft. 6 in. On the north side of the swimming bath building is the entrance, entrance hall, superintendent's office, towel store, waiting-room, and suite of eight private baths. The probable cost of the baths, estimated by the Burgh Architect, Mr. George Simpson, is 8,000*l*.

BANK, NEWCASTLE-ON-TYNE.—The new premises for Messrs. Hodgkin, Barnett, & Co.'s Westgate branch, Newcastle, are situated at the corner of Cottenham-street and Westgate-road. The work has been carried out by local contractors, viz.:—Middlemiss Bros., builders; Mr. Hewitson, slater; Mr. R. Heron, plumber; Mr. W. Ferguson, plasterer; Mr. G. G. Laidler, painter and glazier; Emley & Sons, Limited, mosaic work; McGee & Beckett, fittings. The work is from the designs of Mr. Frank W. Rich, architect, of Newcastle.

BRADFORD PARISH CHURCH RESTORATION.—We are informed that the vicar and churchwardens of the Bradford Parish Church have secured the services of Mr. J. L. Pearson, R.A., to confer with them, in conjunction with Messrs. T. H. & F. Healey, as to the best mode of restoring and extending the Parish Church.—*Bradford Observer*.

THE GAMBLE INSTITUTE, ST. HELEN'S.—Lord Derby has just opened the new Technical Schools and Central Free Library, St. Helen's, erected at a cost of nearly 30,000*l*., and presented to the town by Colonel Gamble, C.B. The site has three frontages, namely, to Corporation-street, Hardshaw-street, and Bickerstaffe-street. Externally the building is faced with red terra-cotta and red pressed bricks upon a sub-base of granite to the level of the ground floor. The whole of the ground floor, with the exception of the offices provided for the use of the director of technical education, has been devoted to the Free Library. The hall, in which is placed the borrowers' counter, measures 55 ft. by 24 ft. The lending department is immediately behind the space for borrowers, and extends 56 ft. back, the full width of the hall. A private room for the librarian is screened off in a corner of the department, and lavatory accommodation for the staff is also provided. The whole of the frontage of the building to Bickerstaffe-street is occupied by the general reading-room, which is 114 ft. long and 32 ft. wide. The reference reading-room, 50 ft. by 32 ft., has a counter running round two sides exactly similar in design to that in the borrowers' department, and behind it are placed the racks for the reference books. A reading-room for boys, 32 ft. by 21 ft., and a ladies' room, 32 ft. by 13 ft., with separate lavatory accommodation in the latter, are also provided. A store-room has been made in the basement, with direct access from Bickerstaffe-street. The entrance to the Technical School is also from Hardshaw-street, and corresponds to the entrance to the Free Library; and the technical director's offices and waiting-room have been provided on the ground-floor level. The basement is devoted to engineering, plumbing, and other manual departments, including an engineering shop, 62 ft. by 32 ft. The rear of the basement is taken up with the engine and dynamo house in connexion with the heating and ventilating apparatus, forming an adjunct to the engineering department. On the first floor of the building fronting Bickerstaffe-street is placed the physics laboratory, 56 ft. by 25 ft., with class-rooms, and a lecture-theatre capable of accommodating ninety students. Immediately behind the physics preparation-room, and entered from the laboratory, is a "dark" room for photographic and other purposes. The wing of the building in Corporation-street on this floor embraces a students' common room, two large class-rooms, and the geometrical drawing-room, with cookery and laundry demonstration rooms, 56 ft. by 32 ft., at the end of the corridor. Teachers' rooms, ladies' cloak-room, and lavatory are placed on either side of the central staircase, and a feature of the first floor, as well as of the floor above, is a continuous arcade, within which it is intended to retain for exhibition the prize specimens of the students, and as a museum for other articles of interest relating to the work carried out in the institute. The second floor is entirely devoted to the chemical and art departments. The chemical laboratory measures 68 ft. by 32 ft., The art department, including the modelling-rooms, the advanced art rooms, and the art-master's rooms, are placed in the wing fronting Corporation-street. The heating and ventilation of the building have been carried out by Messrs. Blackman, of Manchester. The whole of the building is lighted with electricity supplied from the Corporation mains. This branch of the work has been executed by Messrs. Bennet & Druce, of Preston, Mr. E. M. Lacy, electrical engineer, of Westminster, London, having co-operated with the architects in the superintendence of it. The whole of the work has been carried out from plans prepared by Messrs. Briggs & Wolstenholme, of Blackburn and Liverpool, by Messrs. Neill & Sons, of Manchester, under the superintendence of Mr. Goulbourne, clerk of the works. Subcontracts were made with Mr. John Heywood, of Manchester, for the supply of the library and technical school fittings; with Messrs. Pearson & Brown, of Manchester, for the fittings of the

chemical and physical departments; and with Mr. George Swift, of Liverpool, for the tiled dadoes.

RESTORATION OF HILDENBOROUGH CHURCH.—The Church of St. John, Hildenborough, Kent, was opened recently, after restoration and enlargement at a cost of 2,000*l*. The structural alterations consist chiefly of an extension at the western end, where there is a triple-light window filled in with cathedral glass, while the door now faces the south-west. There has also been an enlargement of the vestry, and a door which used to open abruptly into the chancel is succeeded by an entrance leading directly into the small south aisle. The chancel floor has been paved with tessellated tiles. The choir stalls and reading-desk are of English oak. The nave is separated from the chancel by a dwarf screen, with wrought-iron gates, and the building has been fitted throughout with benches of English oak. The aisles have been laid with terra-cotta tiles, and the flooring is entirely new. The timbered roof has been redecorated, and the church is heated by hot-water pipes by Messrs. Metcalfe, of Preston. The shingles of the spire have undergone repair, and a new gilt vane has been provided. The architect was Mr. Hunt, and the work has been carried out by Mr. R. Langridge, of Tunbridge.

FREE CHURCH, KELTY, N.B.—This building has just been opened. The new church occupies a site near the centre of the village. Accommodation, including a gallery which is erected at the western portion of the building, is provided for over 500 sitters. In the rear of the church a hall, capable of accommodating 200 persons, has been erected—together with a vestry and waiting room. It is expected that the entire buildings will cost over 2,000*l*. Mr. T. H. Ure, Dunfermline, was architect, and the contractors were as follow:—Mason work, William Deas, Glenfarg; joiner work, Thomas Rutherford, Blairadam; slater and plaster work, Charles Nisbet, Kelty; plumber work, George Hutton, Dunfermline; painter work, Andrew Allison, Cowdenheath; glazier work, Wm. Meikle & Sons, Glasgow; heating, Wm. Cook & Son, Edinburgh.

EPISCOPAL CHURCH, AUCHTERARDER, PERTH.—The new church for St. Kessog's Episcopal congregation is to be in the Gothic style. The site is in the park behind the Volunteer Armoury. The architects are Messrs. Ross & Macbeth, Inverness. The tradesmen for the various branches of the work are:—Mason, Mr. Peter Anderson, who will also lay the mosaics; joiner, Mr. James Martin; slater, Mr. Robert Gibson, all of Auchterarder; painting and glazing, Mr. Charles Anderson, Perth; and plumber, Mr. James MacLeish, Perth.

BOARD SCHOOLS, VIRGINIA WATER, SURREY.—These schools have just been opened. Mr. W. Menzies was the architect, and Mr. Simpson was the builder.

ST OSWALD'S HOME, CULLERCOATS, NORTHUMBERLAND.—On the 11th inst., the new St. Oswald's Home for Waifs and Strays, which has been erected in Mast-lane, Cullercoats, was dedicated and opened. The new building is in red brick, with stone facings, the latter from the Heworth Quarries, with here and there stone from Brunton Wood Quarry. The architect is Mr. C. Stanley Peach, of London. The whole of the main offices are on the ground floor, a corridor through the centre of the building connecting the various apartments. A feature at the north-west corner of the building is a chapel, with stalls for a small choir.

EXTENSION OF UNIVERSITY BUILDINGS, ABERDEEN.—The tenders for the erection of the south wing of the University have been accepted. The architect is Mr. A. Marshall Mackenzie, A.R.S.A., Aberdeen.—The University Court are prepared to hand over to the Town Council on May 15 next a new site for Greyfriar's Church (partly a pre-Reformation edifice), which, by the University Buildings Act, Aberdeen Town Council has to remove and replace by a new church—the total cost being estimated at 10,000*l*.

BANK PREMISES, SOUTHEND.—The tender of Messrs. Davis & Leaney has been accepted for the erection of the second portion of bank premises, High-street, Southend. The architects are Messrs. Thompson & Greenhalgh, Southend.

NEW CATTLE MARKET, LOUGHBOROUGH.—The new market for the sale of cattle, sheep, and pigs, which has been constructed in the Island House Park, Loughborough, by the Corporation, has just been completed. The work has been planned and carried out by Mr. A. W. Cross, Borough Surveyor.

FREE CHURCH, LANGSIDE, GLASGOW.—This church has just been completed from plans prepared by the architect, Mr. A. Skirving, of Glasgow.

TOWN HALL ADDITIONS, BOVEY TRACEY.—In Bovey Tracey Town Hall recently, Mr. W. O. E. Meade-King, M.Inst.C.E., held an inquiry respecting an application by the Parish Council for leave to borrow 300*l*. for additions to the Town Hall, according to the plans made by Mr. Segar, and known as No. 2 scheme.

ADDITIONS TO PUBLIC SCHOOL, CELLARDYKE, FIFE.—Additions to these schools are being proceeded with, from plans prepared by the architects, Messrs. A. & A. C. Dewar, of Leven. The mason work is being carried out by Messrs. J. & D. Lawrie.

BAPTIST CHAPEL, PUDSEY.—A Baptist Chapel is now in course of erection at Pudsey. The new chapel, which is being erected to designs prepared by Messrs. Hodgson & Farrer, architects, of Bradford and Pudsey, will seat about 600 persons. It will have a frontage to Littlemoor-road. The total cost is estimated at 2,600*l*.

CONVENT OF MERCY EXTENSIONS, DUNDEE.—It is proposed to erect additions, comprising House of Mercy, Convalescent Home, and laundry premises, within the grounds attached to the present Convent buildings at Dundee. The House of Mercy contains accommodation for about thirty-two girls, and has large recreation-room, refectory, workroom, waiting-room, and the necessary kitchen premises, with lavatory accommodation on the ground-floor, and two dormitories, serving-room, bedrooms, bath-rooms, &c., on the first-floor. The cost of the building is estimated at 6,000*l*. Mr. T. Martin Cappon is architect for the work.

CAFÉ, PRESTON.—There was opened at Preston on the 13th inst. a "Jap Café," for Messrs. Clayton Bros. Mr. E. Bush, of Preston, was the architect for the new premises.

ACCOMMODATION FOR THE LIVERPOOL CITY COUNCIL.—It is understood that the City Surveyor is at present preparing a scheme which will shortly be submitted to the Finance Committee for the accommodation of the City Council. The present Council Chamber at the Town Hall is large enough for the purpose as far as floor-space is concerned, but the height of the apartment is inadequate, and its proper ventilation difficult. A proposal has been made to overcome the difficulty by sinking the floor and arranging the benches in tiers after the style of the House of Commons, but the suggestion, it seems, proves impracticable for structural reasons. It is by no means impossible, under these circumstances, that the Council will find a suitable *locale* in the Small Concert Room, St. George's Hall, a chamber admirably adapted for the purpose in every way.—*Liverpool Post*.

TOWER, ST. JAMES'S CATHOLIC CHURCH, BOOTLE.—On the 15th inst. the new tower at St. James's Catholic Church, Bootle, was opened. The work, commenced last May by the contractors, Messrs. S. Woods & Son Bootle, has been carried out under the supervision of Mr. C. Hadfield, of Sheffield, who designed the church, with whom has been associated in the working out of the designs his son, Mr. C. M. Hadfield.

EXTENSION OF CLUB PREMISES, PLYMOUTH.—The directors of the Plymouth and Western Counties Liberal Club have decided to undertake alterations to the premises in Bedford-street. Messrs. Keats & Coath Adams have prepared the plans, and the contract has been entrusted to Messrs. Wakeham Brothers to carry out.

LECTURE HALL, Y.W.C.A. BUILDINGS, IPSWICH.—A new lecture-hall has just been opened in connexion with the Young Women's Christian Association premises, Ipswich. The architect for the addition was Mr. Brightwen Binyon, Ipswich. The work was carried out by Mr. W. Pipe.

RENOVATION OF PARISH CHURCH, HARBORNE.—This church was reopened on the 15th inst., after being closed for the past six weeks for renovation. Plans were prepared by Mr. R. Heaton, architect, which included new clearstory windows in the roof of the nave, windows in the roof over the galleries, re-slating the roof, new hot-water radiators, and enlargement of choir and clergy vestries. Messrs. Moffatt & Sons, builders, have carried out the work.

FREE GARDENERS' HALL, DUNGANNON.—On the 16th inst., a new Free Gardeners' Hall (which is the first of the kind in Ireland) was opened by Viscountess Avonmore, at Dungannon. The hall, which was erected by Mr. John Langlands, from plans prepared by Mr. Samuel Wilson, C.E., is situated in Park-road, almost in the centre of the town. The building contains a billiard-room, reading-room, committee-rooms, and a large hall suitable for public meetings.

SCHOOL, DRUMBO, IRELAND.—In connexion with the Presbyterian Church at Drumbo a national school, to be used also as a lecture hall, has been erected. The school, which is designed to be in harmony with the church adjoining, will accommodate about three hundred. Mr. Robert George, builder, Belfast, executed the work, and Mr. Thomas Roe was the architect.

INSTITUTE BUILDINGS, GLASGOW.—A building is in course of erection for the accommodation of the Southern Section of the Glasgow Young Men's Christian Association, and it occupies a site at the corner of Maxwell-road and Pollokshaws-road. The principal entrance is at the corner, and on the ground floor there will be a small hall seating 300 persons, and also a tea-room with public and private entrances. The rest of the ground floor will be occupied by six large shops. On the first floor there will be the large hall, seating about 800 persons, and having an open timber roof and lighted on either side by four large three-light windows having simple tracery at top. On this floor there will also be a large reading room and library, social parlour, and four class-rooms. The second floor will contain a gymnasium, with spectators' gallery, and having dressing-room, bath, &c., and also seven additional class-rooms. The caretaker's house occupies the corner of the building on the third floor. Lavatory accommodation is provided on each floor. The building will be heated throughout with hot-water pipes, low-pressure system. The walls are of red stone, and the building will be slated with sea-green slates and red ridge tiles. The contractors for the several works are:—Mason, Alexander Stewart; joiner, George Laird & Son; brick, Green & M'Callum; plumber, John Paterson & Company. Mr. John Sim is clerk of the works, and the architect for the building is Robert Miller, Glasgow.

WORKHOUSE SCHEME, LIVERPOOL.—At the fortnightly meeting of the Liverpool Select Vestry on the 17th inst. long discussion ensued upon the proposed conversion of the workhouse buildings at Brownlow Hill into a general parish infirmary, to accommodate about 2,000 acute and chronic cases, and 400 able-bodied paupers as helpers. Mr. Pickthall, Chairman of the Workhouse Committee, recommended the plan prepared by Mr. Henry Hartley, by which it was estimated the accommodation required would be provided for an outlay of about 25,000*l*. Mr. Burke objected to the plan on the ground that as the new pavilions were proposed to be built among existing high buildings the ventilation would be deficient. The discussion was subsequently adjourned for a fortnight.

SANITARY AND ENGINEERING NEWS.

NEW BRIDGE OVER THE OUSE.—An interesting piece of rapid structural engineering work was accomplished on the Great Eastern Railway system during the early hours of the 8th inst. The old railway bridge over the River Ouse, on the London and Norwich main line near Ely, was completely removed and a new wrought iron bridge of one span, some 300 tons dead weight and 130 ft. in length, was erected in its place. At about 1.30 a.m. operations were commenced by removing the rails and upper cross timbers. Half-an-hour later, the first of the iron girders, which numbered twenty in all and weighed six tons each, was lifted by steam cranes and shunted on to the trucks. The work was completed by about 7.30 a.m. Preparations were now made for placing into position the new bridge, which had been previously erected on staging alongside the old bridge. This was effected by slowly hauling the entire superstructure by means of winches fixed on both banks of the river—the bridge itself resting on trolleys running on rails laid along the abutments. This work was completed soon after nine in the morning. The next business was to relieve the trolleys of their 300 tons of dead weight and lower the bridge by powerful hydraulic jacks on to its permanent supports. This done the rails were laid, the permanent way was made good, and the main line connexion completely restored with a delay to only one train of the ordinary Sunday service. The operations were carried out under the directions of Mr. John Wilson, Chief Engineer of the line, by Messrs. Head, Wrightson, & Co.

STREET WORKS, FLIXTON, LANCASHIRE.—On the 6th inst. Colonel Luard, R.E., an Inspector of the Local Government Board, held an inquiry at Flixton into the application of the Barton Rural District Council for permission to borrow 2,800*l*. for works of private street improvement in the township of Flixton. Mr. J. W. Whitworth, Clerk to the Council, explained that the works would be carried out in Princess-road, Lime and Oak-avenues, The Hollies, and several back streets. Mr. Hooley, Surveyor to the District Council, gave particulars of the proposed works.

PUBLIC IMPROVEMENTS, BARRY.—Colonel W. Langton Coke, M.Inst.C.E., one of the Inspectors of the Local Government Board, held a public inquiry recently at the District Council Offices, Barry Docks, in connexion with applications made by the Local Authorities for sanction to borrow 960*l*. for the purchase of additional trees and tree-guards, and 1,510*l*. for the purpose of street improvement. The Surveyor, Mr. J. C. Pardoe, stated that of the sum of 1,510*l*., 770*l*. would be required for widening Park-road, 360*l*. for widening Harbour-road, 150*l*. for public urinals, 100*l*. for sewer ventilators, and 130*l*. for pitching around hydrants. There was no opposition.

DRAINAGE WORKS, EXMOUTH.—Mr. W. O. E. Meade King, Local Government Board Inspector, held an inquiry at Exmouth on the 10th inst., into an application made by the Exmouth Urban District Council to borrow 1,200*l*. for works of storm-water drainage, 830*l*. for works of private street improvement, and 700*l*. for purposes of public street improvement and for works of lighting. Mr. W. H. Beswick, the Surveyor, briefly detailed the proposed scheme.

WATER SUPPLY, LOOE.—Mr. King, Local Government Board Inspector, held an inquiry at Looe recently, in regard to an application of the Liskeard District Council for consent to borrow 1,500*l*. to provide a supplementary water supply for East Looe. Messrs. Jenkin & Son submitted plans and specifications of the proposed works. The arrangements for West Looe were afterwards the subject of an inquiry.

SEWAGE SCHEME, TROWBRIDGE.—On the 13th inst. an inquiry, ordered by the Local Government Board, into the circumstances attending the application of the Urban Council for permission to borrow 20,000*l*. for the purpose of constructing sewage disposal works, was held by Mr. F. H. Tulloch. The Urban Council had previously asked for a postponement of the inquiry until a deputation had visited

Exeter to ascertain the working of the septic system, but the Local Government Board declined to follow this course. The Urban Council were represented by Mr. T. S. Hill (clerk), Mr. F. E. G. Bradshaw (Surveyor), and others. Mr. W. H. Stanley, engineer for the works, was also present, and he presented details of the scheme, which has been adopted by the Urban Council.

SEWERAGE WORKS, ST. GEORGE, BRISTOL.—On the 11th inst., at the offices of the District Council, St. George, Bristol, an inquiry was held by Mr. F. H. Tulloch, M.Inst.C.E., under the Public Health Act, 1875, and the Private Street Works Act, 1872, to consider an application by the District Council for consent to borrow money for works of sewerage, and 4,500*l.* for works of private street improvement. Mr. A. J. Verrier (Chairman), Mr. F. Hicks, Messrs. T. Lewis (surveyor), and J. Stubbs (clerk) attended on behalf of the Urban District Council.

PUBLIC IMPROVEMENTS, MORECAMBE.—Colonel John Ord Hasted, R.E.; an inspector of the Local Government Board, held an inquiry at Morecambe on the 13th inst. with reference to applications made by the District Council for permission to borrow 59,200*l.* for various works of improvement. These included 13,000*l.* required for the construction of a new seawall and promenade, 200*l.* for widening the West End promenade, 26,000*l.* for electric lighting purposes, and 20,000*l.* for works of sewerage. The various proposals were fully stated on behalf of the Council by Mr. William Tilly (clerk), and Mr. John Bond (Surveyor).

SEWAGE SYSTEM, KING'S NORTON.—The District Council of King's Norton having applied to the Local Government Board for sanction to borrow two sums of 1,400*l.* for extension and improvement of the sewerage for the parish, Colonel A. G. Durnford, R.E., one of the Local Government Board's inspectors, attended at King's Heath Institute on the 12th inst. to receive evidence in regard to the application. Mr. J. H. Webb (Assistant Surveyor) was in attendance.

BRIDGE, DURHAM.—The directors of the North-Eastern Railway Company have decided, it is stated, to remove the wooden viaduct at the old Relly Paper Mills, near Durham, and to replace it with a new viaduct of red brick on the eastern side of the old one. The new bridge will be nearly 400 ft. long and 70 ft. high. The new viaduct will be built from the designs of Mr. C. A. Harrison, the Company's Engineer at Newcastle.

BLACKWALL TUNNEL.—The sewer works on both sides of the river, the fireproof fence, and the approach road at Ordnance Wharf, East Greenwich, the river wall at Northumberland Wharf, Poplar, and the "cut and cover" operations on the south side of the Thames are completed. At shaft No. 4 the glazed brick lining is nearly finished. During the month of October six cast-iron rings, equivalent to a length of 15 ft., were erected in the lined portion of the tunnel, the last ordinary ring being placed in position on the 8th. The special rings for the shafts are now being cast in Glasgow, and will be fixed as soon as the shafts are completed. The shield is being taken down, but its shell will remain as a part of the lining of the tunnel. In the further cast-iron portion of the tunnel beneath the river the concrete lining is executed for a length of 175 ft., while for a distance of 1,060 ft. it is finished up to the road level, and preparations are being made for setting the white glazed tiling. On the north shore, out of a total length of 436 ft., the "cut and cover" work is done for a distance of 427 ft. All the concrete foundations for the open approach-roads on both sides of the Thames are formed, and on the north shore the granite-pitched carriageway (with channel and kerb) is laid for a length of 730 ft., and the York paved footways for a distance of 600 ft. The channel and kerb for a length of 200 ft. have also been put down on the south side of the river. With the exception of about 60 ft. at the East India Dock-road end, all the paving is laid in Robin Hood-lane, Poplar. The progress made with the erection of the entrance houses on both sides of the river has been very slow, owing to the non-delivery of stone from the quarries, but this is now being despatched more rapidly. The house on the north side is built to an average altitude of 16 ft., and that on the south side to an average height of 3 ft. 6 in. In connexion with the electric light station a well is being sunk to obtain water for condensing purposes, and the excavation for the boiler-house has been commenced. The total approximate cost of the contract works, including the approach roads, is 723,408*l.*, of which the sum of 8,934*l.* is due to the progress made during the month of October. The contractors are Messrs. Pearson & Son, and the amount of their contract is 871,000*l.*

LOCAL SEWERS IN LONDON.—The Main Drainage Committee of the London County Council have sanctioned, subject to a condition recommended by the Engineer, the construction of local sewers as follows:—Lambeth: 212 ft. of 12-in. pipe and concrete sewer in Mepham-street. Plumstead: 1,060 ft. of 18-in. pipe and concrete sewer in White Hart-lane. St. Saviour's: 408 ft. of 12-in. pipe and concrete sewer in Collingwood-street. Wandsworth: 430 ft. of 15-in. pipe and concrete sewer in Kellino-street, 560 ft. of 15-in. ditto in Letchworth-street, 345 ft. of 12 in. ditto in St. Cyprian's-street, and 200 ft. of 3 ft. by 2 ft. brick and concrete sewer in Totterdown, Furzedown estate, Tooting. Greenwich: 565 ft. and 596 ft. of 9-in. pipe and concrete sewer in Greenfell-street and Boord-street respectively, Blackwall-lane.

ELECTRIC LIGHTING NEWS.

THE "IMPROVED ELECTRIC GLOW LAMP."—If we hang a black velvet screen behind a lamp, and then replace it by a mirror, a great increase in the illumination produced by the lamp is at once apparent. Careful measurements show that the illuminating power of the lamp is increased 80 per cent. This experimental fact has been utilised by the Improved Electric Glow Lamp Company in the construction of their lamps. The special feature about these new lamps is the silvering of the upper part of them, so as to throw all the light downwards, thus practically doubling their candle-power in that direction. The 8 and 16 C.P. lamps are sold at 2s. 6d. each, and as they are what are technically known as "low efficiency" lamps, a long life can be guaranteed. Where special illumination is required, as in workshops where delicate mechanical operations are carried on, on the stage, in shop windows, &c., they can be used advantageously, and will often be found to be more economical than ordinary lamps. They are also specially adapted for lighting rooms by secondary reflection from the ceiling when a soft, diffused light is desirable. We learn from the prospectus that the company hold a special patent for lighting by secondary reflection. As they do not give further particulars about their special patent it would be perhaps a little rash to say that their patent is worthless, but lighting in this way is such an old and well-tried method that it is difficult to believe that anything very novel has been discovered. The lamps are not very beautiful, and it is far too common a practice to use the clear glass form leaving the filament in plain sight. Where ornate lighting is desired, Holophane, Frédureau, or cut crystal globes with ordinary lamps are preferable; but in order to get the full benefit of them the globes must be frequently scrubbed and washed, which is often a serious drawback. In all problems in lighting, it has to be carefully remembered that the reflecting power of the walls, ceiling, and furniture is more important than the actual candle-power of the lamps. It is an every-day experience that if a room be papered with a light-coloured paper and have a clean whitewashed ceiling and light-coloured furniture, an eight candle-power lamp hung in it often produces a better illumination than a thirty-two candle-power lamp hung in an equal-sized room with dark walls and with a dirty ceiling. Remembering also that a clean whitewashed ceiling reflects practically as much light as a mirror, it will be seen that in some cases no particular advantage is gained by using these new lamps.

ELECTRIC LIGHTING, CROYDON.—On the 10th inst. Mr. George W. Willcocks, C.E., a Local Government Board officer, held an inquiry at the Croydon Municipal Buildings into the application of the Town Council for sanction to borrow 10,000*l.* for electric lighting purposes. Among those present were the Mayor (Mr. Alderman Moss), Mr. Alderman Miller (chairman of the Electric Lighting Sub-Committee), Mr. Thomas Walker (the Borough Engineer), and Professor Kennedy. Mr. Mawdesley (the Town Clerk), in the course of his opening remarks, referred to the fact that the Corporation had already expended the sum of 27,500*l.* on electric lighting, and 5,000*l.* of the amount they now proposed to borrow was made up of extras on the original estimate, including 2,665*l.* for arc lighting and 1,250*l.*, the cost of the land upon which the station was erected. The other 5,000*l.* was the estimated sum required for carrying out extensions in parts of the Borough outside the compulsory area. No additional plant would be required. Professor Kennedy gave details of the proposed extensions, and said the original estimate for 27,500*l.* was prepared by himself. The inspector subsequently took the evidence of the Borough Engineer in an application by the Corporation to borrow 5,000*l.* for sewage disposal works.

ELECTRIC LIGHTING OF THE CUTLERS' HALL, SHEFFIELD.—Gas has been superseded by electric light at the Cutlers' Hall. A committee of the Cutlers' Company was appointed some time ago to carry out the change, and they adopted the plans of Mr. S. V. Clirehugh, of Manchester, and placed the contract in the hands of Messrs. Verity (Limited), also of Manchester.

EXTENSION OF ELECTRIC LIGHTING IN THE METROPOLIS.—The London Electric Supply Corporation have decided to apply to the Board of Trade for power to extend their area of supply to the south of Westminster Bridge, Parliament-square, and Victoria-street, Westminster; and to enable them to carry the scheme into effect, they propose to ask for powers to interfere with the tramway of the London Tramways Company in Vauxhall-road. The Fulham Vestry have given notice that they will next month apply to the Board of Trade for powers to supply their district. In laying their electric lines they propose to pass over, along, across, or under railways belonging to the Metropolitan, the Metropolitan District, the London and South Western, the Great Western, the London and North Western, and the Midland Railway Companies. The Blackheath and Greenwich District Electric Light Company are proposing to extend their area of supply to the whole parish of Greenwich, as well as to the parishes of Charlton, Eltham, Kidbrook, Lee, and Lewisham.—*Daily News.*

STAINED GLASS AND DECORATION.

WINDOW, KILLYGORDEN CHURCH, DONEGAL.—A new stained-glass window has just been designed and manufactured by Mr. Early, of Dublin, for Killygorden Church, Donegal, in memory of the late Rev. J. M'Grosty, P.P. It consists of four lights and tracery, with a large rose window above. The subject in the four lights of lancet shape are the Madonna, St. John the Evangelist, St. Columba, patron of the diocese of Derry; and St. Patrick.

WINDOW, ATHERSTONE CHURCH, WARWICK.—The east window at St. Mary's Church, Atherstone, which has been filled with stained glass at a cost of about £450, was dedicated on the 12th inst. by the Dean of Worcester. The work has been entrusted to Mr. C. E. Kempe, London. The lower central light represents "The Nativity," while on either side are pourtrayed "The Annunciation" and "The Presentation in the Temple." The three upper central lights contain a representation of "The Crucifixion," and figures of the prophets Isaiah and St. Paul, typifying "Prophecy" and "Testimony" respectively. Figures of saints and angels fill the upper parts.

FOREIGN.

FRANCE.—The Government has commissioned M. Roll to paint, for the Versailles Museum, a large picture representing the ceremony of inaugurating the "Alexandre III." bridge by the Emperor and Empress of Russia.——A competition will shortly be opened at Paris for the design for a pavilion for the Argentine Republic, to be erected in the 1900 Exhibition, and which is to cost 40,000 francs for the construction and 50,000 for the interior decoration.——A monument to Montaiglon, the eminent archæologist, has just been inaugurated at Père Lachaise. The architectural portion is designed by M. Corroyer, and the bust modelled by M. Sicart.——M. Yperman, the painter attached to the Commission des Monuments Historiques, is to exhibit at the Ecole des Beaux-Arts the drawings of mural paintings which he has made in Greece, in the course of a mission entrusted to him by the Department of Fine Arts.——The new pavilion at the Luxembourg has just been completed. It is ugly enough in general appearance, but is somewhat relieved by eight groups in bronze on the exterior.——The architect in charge of the works at Sacré Cœur has had executed a remarkable model of the church, to $\frac{1}{25}$ m. scale, reproducing everything down to the minutest details. It is to be sent to the 1900 exhibition.——The new abattoirs for Paris, on the left bank of the Seine, are to be opened about the end of this month.——M. Naudin, the architect, has been commissioned to carry out the monument which the city of Lyons is to raise to the memory of President Carnot, the sculptural portion of which will be modelled by M. Gauquié.——The jury of the competition for a group of schools at Courbevoie has awarded the first premium to M. Tronchet, the second to M. Choupay, and the third to M. Pergod.

WASHINGTON, U.S.—The corner stone of the Hall of History of the new American University at Washington was laid on October 21. The building will have its front of white marble. It is two stories high, with attic and basement. The architects are Mr. William M. Poindexter, of Washington, and Messrs. Van Brunt & Howe, of Kansas City.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Ransome & Co. have issued a circular stating that, in consequence of recent rises in the rates of materials and wages, they have been obliged to advance all their printed prices, as they appear in the list of their 1896 catalogue, by 10 per cent. They have decided, however, to execute all orders, results from tenders now out and awaiting decision, at the prices quoted therein, provided the orders are placed with them not later than the 30th inst.——Messrs. Charles Carr, of Smethwick, have purchased the business of the "Rocket metallic ignition tube" for gas-engines, made of a metallic amalgam specially suitable for their purpose.

COUNTY MUSEUM, ST. ALBANS.—A committee has been formed for receiving subscriptions towards the building and endowment of the projected County of Hertford Museum, for which they hope to raise a fund of 5,000*l.* The Earl of Spencer has offered—conditionally upon sufficient funds being provided for the buildings and their maintenance—to give an adequate site in the field known as Cock Meadow, on the Hatfield-road, between St. Peter's Church and the almshouses founded by Sarah, Duchess of Marlborough, on the site of the old manor-house. It is proposed to vest the Museum and its contents in the County Council, under provisions of the Technical Instruction Act, 1889. The museum is now stored temporarily in premises lent by Mr. R. W.

Ellis, and already forms a valuable collection illustrative of the geology, natural history, and archæology of the county and St. Albans.

DAMAGES AGAINST A BUILDER.—At an adjourned sitting of the St. Albans County Court recently, the hearing of the case was resumed in which Alfred Horne, a bricklayer, claimed from Mr. E. Dunham, builder, St. Albans, the sum of 25*l*., as compensation for injuries received from a fall occasioned by defective scaffolding. The evidence for the plaintiff was that while working on some houses in course of erection at St. Albans, the scaffolding, which was defective, gave way, and he fell, with the result that his leg was badly broken, and he had not since been able to follow his employment. His injuries were of so serious a character that he would not be likely to resume work for a long time to come. After expert evidence had been given, his Honour gave judgment for the plaintiff for 16*l*. and costs.

PUBLIC IMPROVEMENTS, CARDIFF.—Colonel W. Langton Coke, Local Government Board Inspector, recently held an inquiry at the Town Hall, Cardiff, to receive evidence with respect to an application made to the board by the Cardiff Corporation for powers to borrow the following sums:—69,000*l*. for the purchase of Llandaff Fields for public walks and pleasure grounds and other purposes, 5,114*l*. for depots, 2,647*l*. for the construction of a new road from the churchyard towards Penylan, 2,060*l*. for the provision of public conveniences at The Hayes and in Fitzroy-street, 853*l*. for works of sewerage, 750*l*. for the erection of a superintendent's house at Roath Park, 500*l*. for the widening of Queen's-street, 250*l*. for the widening of Wedmore-road, and 86*l*. for the widening of Carmarthen-street, the total amount being 81,260*l*. The inquiry was attended, among others, by Mr. Harpur, Borough Engineer, Mr. J. L. Wheatley (Town Clerk), and Mr. T. Webber.

MEMORIAL BUST, HAMILTON, N.B.—On the 12th inst., in the Institute of the Sheriff Court House, Hamilton, Sir John Watson, Bart., of Earnock, unveiled the memorial bust of the late Mr. J. C. Forrest, of Treesbanks. The bust is life-size. The artist engaged was Mr. W. Birnie Rhind, A.R.S.A., Edinburgh.

CAPITAL AND LABOUR.

EMPLOYMENT IN THE BUILDING TRADES.—The *Labour Gazette*, in its monthly report, states that the building trades continue busy and have still further improved. The percentage of unemployed in unions making returns is 0·9, compared with 1·3 per cent. in September and 1·9 in October of last year. Eight disputes have occurred during the past month, seven involving 173 workpeople.

LEGAL.

CLAIM AGAINST THE ST. PANCRAS GUARDIANS.

AT the Referee's Court, Portugal-street, on Monday last, Mr. Ridley, Q.C., resumed the hearing of this claim, which arises out of the contract for erecting the workhouse buildings in King's-road. The plaintiffs are Messrs. T. Drew Bear, James Brown, Henry Tolputt, and the contractor, Mr. Wm. Brooks, of Folkestone.

Mr. Reginald Bray and Mr. Alfred Hudson appeared as counsel for the plaintiffs and the contractor; Mr. English Harrison and Mr. W. Moyses for the defendants, the St. Pancras Guardians; and Mr. MacIntyre and Mr. R. W. Turner for the architects, Messrs. Arthur and Christopher Harston.

It appears that the original contract for building the workhouses, out of which the dispute had arisen, was given to Messrs. Kirk & Randall, builders and contractors, of Woolwich, but owing to circumstances which do not enter into the case, that contract was determined, and fresh tenders invited for completing the work. Mr. Wm. Brooks' tender for about 50,000*l*. was accepted in May, 1892, and he at once commenced operations. In November, 1894, however, this contract was also determined, owing to disputes between the contractor and the clerk of the works appointed by the architects and also the Guardians' Board. The architects had certified 47,800*l*. as due to the plaintiffs, and the present action was brought to recover the balance alleged to be due.

The claim is arrived at as follows:—

Nett cost of work executed...		£65,479
Profit on same at the rate of 10 per cent....		6,547
		72,026
Received on account...		47,800
Balance due to plaintiffs		£24,226

An alternative claim was also put in by plaintiffs as follows:—

Nett cost of works executed	£65,479
Ten per cent. profit on £50,861, certified work done by architects	5,086
In addition to which they claim on other matters	1,500
	£72,065
Less paid by Guardians	47,800
	£24,265

The case for the plaintiffs shortly was that they would be able to prove that the contractor Brooks was prevented from continuing the work by the action of the clerk of the works (Mr. Poole) appointed by the architects, who condemned the materials without sufficient cause. They also said, in support of this statement, that Brooks had to be continually changing his foreman of the works.

The defendants generally denied liability, and they relied on the Public Authorities Protection Act of 1893, which provides that they are not responsible for damages after the expiration of six months from the date of the occurrences alleged by the plaintiffs.

On the previous occasion, when the case was before the learned Referee, Mr. T. L. Fearon, manager to the contractors, deposed to the alleged unfair condemnation of materials by the clerk of the works. The witness stated that a number of girders were refused by the clerk on the ground that they were of wrong dimensions. The defence to this was that if they were not of the precise dimensions mentioned in the tender, they were quite equal in strength and general utility. Amongst several similar matters, Mr. Fearon mentioned the timber used for flooring purposes. This timber, it appeared, was a portion of a quantity purchased by the contractor from the Guardians' Board, they having purchased it from Messrs. Kirk & Randall, the first contractors, which purchase, it was alleged, was part of the contract. The plaintiffs contended that this was purchased as sound timber, and was suitable for the work. When, however, the floors in C Block had been laid, the clerk of the works went over the work, marked nearly every board and condemned it. This wood, it was alleged, was equal to the very best brand on the market.

The witness also referred to some condemned slates for roofing. He said that a large number of slates were prepared and holed on the works, but they were condemned because the clerk of the works considered they were not properly holed. He said he had experienced great difficulty in obtaining a sufficient quantity of the required shade; in fact, he was quite unable to do so in consequence of the inability of the kilns to supply them. Evidence was also given as to some tanks and window sashes which had been condemned by the clerk of the works, the witness explaining in detail the trouble he had had with the work of the minor contracts, and spoke generally to the alleged unfair treatment received at the hands of the clerk of the works.

The cross-examination of the witness explained the reason of there being so many plaintiffs in the action. The witness said that somewhere about April an arrangement was made with certain of the creditors who had supplied quantities of the material, and now appeared as plaintiffs, to act as a committee to look after the interests of the other creditors of Brooks, and called together by Brooks. Under this arrangement they agreed to supply material so that the work might go on. Witness contended that this was necessary, not because there was a lack of capital at the outset, but because 20,000*l*. had been spent on the work, and only 10,000*l*. received in payment.

When the further hearing of the case was resumed on Monday last Mr. English Harrison further cross-examined Mr. Fearon, who admitted that the diary which was produced, and with which he refreshed his memory, was written up at intervals from rough notes made daily—generally on Saturdays. As to the floor-boards of Block C, which had been condemned by Poole, the witness explained that these were left by Kirk & Randall, and allowed for by Brooks in his accepted tender.

The learned Referee asked whether it was not a fact that the guardians seemed to want Brooks to begin work while the buildings were being occupied by "lying-in women."

Mr. English Harrison replied that that was so. The original conditions of the contract accepted by Brooks stipulated that the builders should, by their operations, cause the least possible inconvenience to the inmates.

The witness was then cross-examined as to Poole's conduct to the foremen. He said that Grosby, the first foreman on the works, was removed owing to illness, and he was succeeded by Chapman, who left without notice. Then a man named Brown acted for a while until Grosby, having recovered, returned to his duties. He (witness) would not allow that Poole simply did his duty during the course of the work, nor did he ever accept Poole's plans as correct. Confronted with a letter signed by witness to the architects, stating that Poole's plans of the variations to the foundations of Blocks C, D, E, and H were accurate, the witness said that he afterwards found that the plans were incorrect, although he never mentioned this to Messrs. Harston.

On Tuesday the witness was taken in detail through the particulars of the ironwork. He said that on October 6, 1892, he (witness) had never said that Poole could have acted differently with respect to the rejected columns. He never kept any books in which were entered what goods came on the works; the invoices, however, were booked up. He did have Messrs. Harston's consent to the sub-contracting for the ironwork. He (witness) had never had that consent in writing, but Messrs. Harston knew that he could not cast them himself. On October 26, 1892, there might probably have been a complaint about the columns not being in line. Poole spoke to him about it, and he (witness) told Poole that the columns were not then "fixed up." He had a complaint from Messrs. Harston on November 15, 1892, stating that lugs were not cast on certain columns. He did not reply to that letter in any way, but immediately ordered fresh columns of Messrs. Drew Bear. On February 13, 1893, there might have been a complaint that the columns of the H Block were not in line. On March 27 they were, however, put in order. There was no difficulty about that. Messrs. Drew Bear's people had been working on the columns from February 13 till March 27, 1893. Messrs. Harston's letter of March 27th, 1893, to Mr. Brooks, stating that the columns were out of the upright and asking that they should be put right, was nothing but an interference with their work. They were at that time putting up the columns loosely, before putting them in line and putting them right. They put them right when they were ready to do so. They did not put in the bars and plates in the C Block, but that was in accordance with Poole's orders, as he (Poole) said that the bars would be damaged if a piece of brick or timber fell on them. In those circumstances they made holes there and then. Some of the rods which they used were welded. The bars used were thin things, but they had no flange at the bottom. There were welded rods used in B and K Blocks. There were several parts of the B Block where there were welded rods used, and he (witness) could go there and point them out to the learned Counsel.

Mr. English Harrison: I should like that to be done.

The learned Referee: Will you go then?

Mr. English Harrison: My clients will go. I do not say that I can go.

Cross-examination continued.

His foreman and fixers could say that the rods were welded. There was no complaint as to the rods in the C Block. They put in the rods according to the agreed plan and according to the specification.

Mr. English Harrison: Were you putting them in in two short lengths instead of one?—We were putting them in in accordance with the plan.

Mr. English Harrison: I must ask you to answer the question. It is no answer to say you put them in according to plan or specification.

The witness asked that he might be handed the plan, and he would explain what he meant. This was done, and the witness repeated that they put the rods in in two lengths, according to agreement. Poole, on October 9, 1893, did call his attention to the bars forming the grid in the ironing room floor, complaining that they were either too short or else in the wrong place, and asking that all the bars should lie on the walls 6 in. as specified. That was mostly an unfounded complaint, and a complaint which he should characterise as frivolous, because it made not the slightest difference.

The learned Referee said that his opinion was that the specification was the first at fault in the case. (To Mr. English Harrison): I do not think you did much with the bar-lengths, and I think that the witness has done the best he could under the circumstances.

The witness was next examined as to the facing bricks. He said that on July 5, 1892, he arranged with Mr. E. P. Brown, who was a friend of Poole's, for him to deliver some gold stock-facing bricks at Blackfriars at 34*s*. and 45*s*. Poole had told him that he did not condemn the whole consignment of bricks but only the picked stock facings. They received no discount on the bricks with the exception of the 2½ per cent. for cash in a month. Poole probably marked a piece of brickwork on September 28, as he was constantly doing so. Poole might have complained that they had put in a quantity of facing bricks which were not proper stock-facing bricks. They rubbed Poole's mark off and left the bricks there, although Poole had intended that they should cut the bricks out. The bricks were there now.

The learned Arbitrator said that, that being so, they could hear whether the bricks were really good or bad. A man was bound to use a discretion in these matters, but if he did not exercise it reasonably he (the Arbitrator) would not regard it at all. If he acted capriciously he would not regard it all. The point in the case was that if Poole capriciously rejected bricks he would not recognise it.

Mr. English Harrison, with all deference, thought that was not quite the point.

The learned Referee said that he wanted to see the clerk of the works and the architects in the witness-box.

Mr. English Harrison said that the plaintiffs were endeavouring to make the learned Referee sit as a Court of Appeal on the discretion of the architects, so that he felt he must go into these matters.

The learned Referee: I think you could have gone much more quickly over the ground.

Cross-examination continued:—In October, 1893, Poole pointed out to Brown, who was then the foreman, that his labourers were building best stock-facing bricks into the basement, but those bricks had already been condemned by Poole himself, who did not recognise them again. They could not use the bricks for any better purpose as Poole had condemned them. Samples were produced, when the learned Referee inquired what

fault could be found with those in court as facers for a workhouse? He said it gave him the impression that somebody or other was a martinet in the condemnation of those bricks. He could not see why the bricks produced should not have been used.

Upon the learned Referee taking his seat on Wednesday, Mr. English Harrison said that he now proposed to take the witness shortly through the question of the timber, but he did not propose to go so elaborately into this matter as he had felt it necessary to do with the others. He wished, however, that it should be distinctly understood that he was not to be taken as admitting anything if he did not cross-examine Mr. Fearon on every single item and every single interview which he had deposed to.

Mr. Hudson agreed. He said that they must "give and take" in those matters. They could not proceed altogether on strict lines.

The witness, in answer to Mr. English Harrison, said that Poole was constantly condemning the timber. Poole said that he would have timber without heart, without knot, and without sap. Witness replied that such timber did not grow. Poole had cautioned the foreman about using sappy timber; he did nothing else but caution. They had planed or rubbed out Poole's marks condemning small rafters hundreds of times, and the rafters which he had condemned were in the building now. He had perused the whole of Poole's diary within the last fortnight, but not with a view to the preparation of his evidence. The witness said that in September, 1893, he purchased from Tolputt, of Folkestone, sixteen beams, as tie beams, for the laundry block, and those were condemned at once by Poole as rubbish. Some were chalk-marked by Poole as unfit before being unloaded from the trucks, and he (witness) sent them straight back. A second lot of tie beams were forwarded by Tolputt, and some of these were condemned also by Poole, but after they had been seen by Mr. Harston they were passed and were used, with the exception of some pieces cut up for sundry purposes. After this Tolputt declined to serve witness any further, and he, therefore, selected logs from Baynes & Beard, of Reading, and elsewhere. The price paid to Tolputt was 3s. per cubic load delivered, but more was paid to the other firms to complete the order.

At this stage quotations and invoices were produced by the plaintiff's counsel to prove this.

The witness, in further cross-examination, said that he had no place provided on the site on which to stack and season his floor-boards and other timber.

The witness was then cross-examined by Mr. English Harrison as to the slating. He said that Poole had objected to the quality of the slates, and to the way in which they were holed. The witness admitted that he had made a profit of 25 per cent. out of the slating, and said that if he had been allowed to do the work his own way he could have done as well all round. With reference to the coach-house roof, the witness said that Poole complained about that sometime in January, 1894. In February, Poole told him to take Mr. Harston's opinion about the slating of the roof. Mr. Harston had condemned the ridge-rolls as not being smooth enough. Mr. Harston inspected them on the scaffold. The ridge-rolls were not sanded, but they were planed. They were not imperfect, and were holed, as specified. He had looked at them to see whether they were holed. He did not write to Mr. Harston to say he had made a mistake. There was a complaint about the ridge-rolls not being quite fixed. They complained about the wings as not being planed off at the ends. Better ridge-rolls were ordered at a higher price, The fact was that better goods were wanted than those specified. That was the reason of all the fuss, and was the whole of the story as to the complaints about the ridge-rolls, as, in fact, it was to everything else.

Cross-examined by Mr. MacIntyre, for Messrs. Harston, the witness said that Brooks had not carried out a previous contract in London, nor had witness before superintended a job in the Metropolis. He was Brooks' manager, not foreman. Brooks' largest previous work was the General Hospital, at Folkestone, at a cost of 10 200*l.* He also had carried out the building of four churches and many houses. Folkestone prices and wages were lower than London ones. Witness allowed for this in making up his tender, and agreed to pay London trade union rates. He made up his estimate, and added 10 per cent. profit. His tender was 53,375*l.* Witness made a good profit on the stonework, ironwork, and slating, but other items were not profitable. Brooks could have financed the job, although he had a promise of an overdraft from his bank for 5,000*l.* Brooks asked to withdraw the tender after it had been accepted by the Guardians, not for financial reasons, but on account of the probable worry. The architects would have treated witness better during the progress of the job if it had not been for the clerk of works. There were cases in which the architects had over-ruled the clerk of works. Witness was on friendly terms with Poole at first, and had invited him to his house at Folkestone, on a visit.

At this stage the further hearing was adjourned till the following day.

Mr. Fearon, further cross-examined by Mr. MacIntyre, said that from his point of view the architects had not been lenient with him. He avoided having any serious row with Poole. In February, 1893, he told Mr. Harston that he could do nothing right for Mr. Poole, who condemned bricks, timber, sand, and almost everything they had—in fact, nothing was good enough for Poole. Mr. Harston told him that he would have to carry out Mr. Poole's requirements to the letter. Mr. Harston, in February, 1893, came down and investigated the complaints, and afterwards wrote that the powers of the Clerk of the Works were limited, and they could appeal to the architects, but that the materials must be up to sample and specification. At a meeting of Brooks's creditors, on April 21, 1893, it was decided that the contract should be continued with their help. Witness wrote to Poole to that effect. As a fact they went on with the building under the contract until December, 1894. Mr. Harston invariably upheld the Clerk of the Works, although he gave way on one or two occasions. He appealed very seldom to Messrs. Harston. He could not remember the date when he last appealed to Messrs. Harston. Under the contract Mr. Poole had no right to condemn anything, but he did do so for all that. If he had appealed to Mr. Harston in all cases Mr. Harston would have had to remain altogether on the works. When he sent back materials which Poole had condemned it was not because they were not up to contract.

Mr. MacIntyre: I suggest to you that there were three courses adopted. When you removed work condemned by Poole you knew it was not up to specification; when you appealed to the architect you were not sure whether he would allow it; when you ignored Poole's orders you hoped it might pass muster?

The Witness: I cannot say.

Further cross-examined, the witness stated that, in order to get space in the works, he sold about 30,000 of the old bricks at 8*s.* a thousand, and it was true that he used some snapped bricks and bats in a boundary wall when it did not matter.

The case had not concluded when we went to press.

ALTERATION OF A STAIRCASE LEADS TO LITIGATION:

ACTION IN THE CHANCERY DIVISION.

THE case of Peebles *v.* Crosthwaite, which was tried before Mr. Justice Romer in the Chancery Division recently, and concluded on the 12th inst., was an action brought for an injunction to restrain a landlord from continuing an interference with a staircase at 153, Victoria-street. It appeared that Mr. P. C. Peebles, a paper maker, took a lease of two floors of the building in question, and of a right to use a staircase, in common with other people. The lessor, in August, 1895, took the opportunity of the time between Saturday and the end of the Bank Holiday to alter the staircase by putting in a lift, and turning some of the stairs, which were straight and of one width, into winding stairs, narrow at one end. This alteration was made without Mr. Peebles' leave. After the commencement of the action Mr. Peebles died, but the action was continued by his executors. The executors sold the premises and business and other property to a new company called A. M. Peebles & Son, Limited, in which two of the executors were directors, who took part in managing the business, but the property had not been assigned. The company put up its name on the premises, and carried on business there, and it was urged on behalf of the defendant that there had been a breach of the lessee's covenant not to part with possession of the premises without the lessor's consent in writing, and that the defendant was therefore entitled to determine the lease.

His lordship, after hearing evidence and arguments of counsel at some length on the points of law raised in the case, decided that there had been a substantial alteration in the plaintiff's right of way, and he held that what the defendant had done was a breach of the covenant. He therefore granted an injunction restraining the defendant from continuing the staircase in such a manner as to interfere with the right of way, and ordered the defendant to pay the costs of the action.

Mr. M'Call, Q.C., Mr. Eve, Q.C., and Mr. MacSwinney appeared as counsel for the plaintiff; and Mr. Ralph Neville, Q.C., and Mr. Upjohn for the defendant.

ALLEGED DAMAGE TO HOUSES THROUGH EXCAVATION:

CASE IN THE CHANCERY DIVISION.

THE case of Jorderson *v.* The Sutton, Southcotes, and Dryport Gas Company, came before Mr. Justice North in the Chancery Division on Friday, the 13th inst., it being a motion for an injunction to restrain the defendants from digging a trench and making excavations for the purpose of constructing a large gas-holder, so as to endanger the stability of the plaintiff's houses and land, and also so as to obstruct his light.

Mr. Swinfen Eady, Q.C., appeared as counsel for the plaintiff; Mr. Vernon Smith, Q.C., and Mr. Boon for the Gas Company; and Mr. Rawlin, Q.C., for the contractors.

Mr. Rawlin asked for further time to prepare evidence.

Mr. Eady said he was willing to concede further time if, in the meantime, the defendants would undertake not to continue the excavation, as it would tend to increase the subsidence of the plaintiff's land. The defendants had first proceeded to dig a large circular trench, and they were now filling up the space that had been excavated. Their next procedure would be to remove the earth from the centre. There was a great mass of earth in the centre to be removed, and he therefore asked that until the motion was disposed of there should be no further excavation.

Mr. Rawlin said that as long ago as September 15 the trench was dug down to its lowest depth, and whatever damage had been done was done then. All that the contractors were doing now was to fill up the hole made by the trench with a very solid brick wall, which would make the ground much more stable than it was before, and they had no intention of going any further.

Ultimately the contractors undertook not to proceed further with the excavation during November and December.

Mr. Boon, on behalf of the Gas Company, said that this undertaking did not affect his clients. The undertaking was by the contractors, in whose hands his clients were.

ALLEGED INTERFERENCE WITH ANCIENT LIGHTS:

CASE IN THE CHANCERY DIVISION.

THE case of Brown *v.* Collins came before Mr. Justice North in the Chancery Division of the High Court of Justice on Friday.

Mr. Swinfen Eady, Q.C., who appeared in support of the motion, which was for an injunction to restrain an alleged interference with the plaintiff's ancient lights, said that, according to the plaintiff's view, there had been a very serious obstruction. The defendants were building on a site which had only some low sheds existing there before, and they had erected a high building which was exactly at the back of certain windows belonging to the plaintiff. The plaintiff had applied to the defendants to stop, but they seemed to be going on with their building very speedily.

Mr. Crawley, on behalf of the defendants, asked that the motion might stand over till next week, in order to enable them to answer affidavits.

Mr. Eady said that if the defendants would give an undertaking not to proceed with their building in the meantime, he was quite willing that the case should stand over.

Mr. Crawley said that he was not in a position to give any undertaking at all. He was instructed that there was no obstruction.

Mr. Eady said that the defendants were going on building in defiance of the plaintiff's notice. If the defendants would deliver their affidavits by Tuesday, the motion could stand till Thursday. The defendants would go on with their building at their peril.

This course was adopted.

ARTIST'S ACTION AGAINST CONTRACTORS.

THE case of Davies *v.* John Aird & Sons, reported in last week's issue of the *Builder*, again came before Mr. Justice North in the Chancery Division on Friday, the 13th inst., it being a motion by the plaintiff to restrain by injunction the defendants from continuing certain blasting operations near Radnor, in Wales, in such a way as to be, as the plaintiff alleged, an intolerable nuisance to him.

Mr. Ingpen, counsel for the plaintiff, now said that a great deal of evidence had been filed by the defendants the day before, and that morning, and he asked that the motion should stand over till next Thursday, the defendants continuing the undertaking which they gave last week, viz., that no dynamite should be used in future in the blastings in the quarry, but only gunpowder. His client was carrying on some important works for the next exhibition at the Royal Academy, and even in the modified condition of the blasting operations he was seriously annoyed. The plaintiff also desired that the trial should be expedited.

Mr. Swinfen Eady, Q.C., for the defendants, said that he was quite willing that the trial should be expedited, and it was arranged that the evidence should be completed as soon as possible.

The motion accordingly stood over on the same terms as those given by the defendants on the 6th inst.

THE ACTION BY THE LONDON SCHOOL BOARD:

THE ALLEGED INTERFERENCE WITH ANCIENT LIGHTS.

THE case of the London School Board *v.* Harrod's Stores, reported in last week's issue of the *Builder*, and which was a motion for an injunction to restrain the defendants from the alleged interference with ancient lights belonging to the plaintiffs came again before Mr. Justice North in the Chancery Division on Friday.

Counsel now stated that it had been arranged that

the motion should stand for three weeks on the same terms as those given on the 6th inst., viz., on the defendants undertaking not to do any building which would further interfere with the plaintiffs' ancient lights.

THE LIABILITY OF CONTRACTORS FOR INJURY TO WORKMEN.

At the Lancaster County-court on the 13th inst., Judge Coventry had before him a case involving the liability of contractors for injuries to their workmen. William Gorst, a labourer, brought an action to recover compensation for injuries received during the construction of a sewer. In the spring of the present year Messrs. Rigg & Co., of Carnforth, were contractors for the making of a sewer at Carnforth, and on April 8 plaintiff was working in the trench, 19 ft. deep. The earth fell in from one side, almost burying complainant, who was imprisoned for ten hours, and only released after very great difficulty. Plaintiff alleged that the trench was unsafe; that it was only protected on one side; that even that side was insufficiently protected, and that more timber had been asked for by the workmen, but refused by the foreman, on the ground that the defendants grumbled at the use of so much timber on the job. It was also stated that the Surveyor of the Urban District Council of Carnforth mentioned on the morning of the accident that he was afraid they were going to have it in at a point where the accident subsequently happened. The lower part of the trench was not protected at all for several feet. The defence was that the accident happened in consequence of a tunnel or heading (whose existence was unknown) having given way at the point where plaintiff was working.

Mr. J. Overend Evans, barrister, who appeared for defendants, held that on that account they could not be held to be liable, and several expert witnesses said that the system of timbering adopted by the defendants about this job was quite sufficient protection. Plaintiff's solicitor claimed 77*l.* 10*s.* 9*d.*, made up of loss of wages, cost of nursing, and 50*l.* injury, pain, and suffering caused by the accident. Verdict for plaintiff for 65*l.*—*Preston Herald.*

USING UNSOUND TIMBER IN ROOFS.

On the 18th inst., H. Weaver, of 54, Ingrave-street, Battersea, was summoned before the Wimbledon magistrates by the Wimbledon Urban District Council in respect of two houses being erected by him in Trinity-road, Wimbledon, for contravening By-law 58 by using purlins which were not of sound and good quality in the construction of the roofs, and for not building in accordance with the deposited plans. The timber used for purlins had previously been condemned when fixed as floor-joists.

The defendant was fined the full penalty in each case, amounting in all to 20*l.*, together with 28*s.* costs, or, in default of payment, one month's imprisonment.

STEWART'S GRANOLITHIC CO. *v.* ANDREWS & SONS.

At the monthly sitting of the Watford County Court, on the 16th inst., the case of Stewart's Granolithic Co. *v.* Andrews & Sons was heard. Mr. Bernard Lailey, barrister, appeared for the plaintiff, and in opening the case said that it had been adjourned at the October sitting of the court in order to prove that the two letters and a post-card, which defendant denied having received, had been posted.

Witnesses having given evidence on this point,

The Judge, in summing up, went over the evidence which had been given at the previous hearing. The parties, he said, differed as to what took place at the interview between Mr. Munro and defendants regarding the work being done piecemeal; and with regard to the letters it appeared to him that they had actually been posted, but, on the other hand, the defendants totally denied the receipt of them. The burden was on the plaintiffs to make out their claim, and the question was whether there was any contract made by which the defendants were bound to employ the plaintiffs, as they alleged. It was clear to his mind that the matter went off upon the point as to the mode in which the work was to be done for the prices mentioned, whether the work was to be done at one time, as the plaintiffs alleged, and as was necessary for properly carrying out the works of the hospital. In his judgment the parties never were at one upon this point. He had no doubt that the plans were shown and explained to Mr. Munro on August 1, and that Mr. Andrews believed that Mr. Munro understood that the work was to be done in sections, but in the face of Mr. Munro's denial, he had come to the conclusion that no agreement on this point was made out. The plaintiffs were not subsequently willing to do the work in sections without extra payment, which the defendants would not agree to, and the matter was thus broken off by them. The point was a material one, and he thought he was right in the conclusion that the parties were never agreed upon it. The result was that no complete agreement was made, and the plaintiff's case failed. Moreover, he failed to see on the documents exchanged on August 1 anything in the nature of a binding contract on the part of the defendants. Mr. Munro himself had said that the document which he had handed to the defendants was merely a memorandum of prices, and it was understood that there should be a formal confirmation. The letter given in exchange by the defendants contained no agreement by them to employ the plaintiffs, but left the matter open to a future order by the words, "Upon hearing further from us you can proceed to act." In answer to a question put by his Honour as to how upon these words an unconditional contract could be made out, it had been inferred on the part of the plaintiffs from the subsequent letters, but none of these had contained any order or authority to proceed as suggested. He, therefore, thought the case for the plaintiffs failed, and he accordingly dismissed the case, with costs against the plaintiffs.

ACTION AGAINST A CONTRACTOR AND BUILDER FOR DAMAGES FOR ALLEGED NEGLIGENCE.

The case of Deane *v.* Nash came before Mr. Justice Wright, sitting without a jury, in the Queen's Bench Division on Tuesday last, it being an action brought by Eleanor Deane, a married woman, against the defendant, John Nash, a contractor and builder, to recover damages for personal injuries which she sustained on January 2 last while passing along a temporary footpath in Merry-street, Walworth, through the alleged negligence of the defendant's servants. The defendant denied that there had been any negligence.

The case for the plaintiff was that on the evening of January 2 she was walking across the footway in question, which the defendant had erected along a hoarding in connexion with the building of certain houses in Merry-street. At one end of the footway was an entrance into some mews, and here the footway sloped downwards, one in five, to the ordinary level of the roadway. While descending this incline, which she alleged was slippery in consequence of the weather, the plaintiff fell and broke her wrist. The plaintiff's allegation was that this spot was in the nature of a trap, that the slope was unnecessarily steep, and should have had cross battens to prevent slipping, and also that it was badly lighted.

His Lordship, after hearing the evidence, said that he was quite satisfied that this was one of those unfortunate accidents which would at times occur, and he came to the conclusion that there was no negligence at all on the defendant's part. In these circumstances there would be judgment for the defendant.

Mr. Moyses, counsel for the defendant, said that his client was very sorry for the plaintiff, and he would not ask for any costs.

Judgment accordingly for the defendant, without costs.

MEETINGS.

FRIDAY, NOVEMBER 20.

Architectural Association.—Mr. F. Inigo Thomas on "Garden Design." 7.30 p.m.

MONDAY, NOVEMBER 23.

Surveyors' Institution.—Mr. Walter C. Ryde on "The Agricultural Rates Act, 1896." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Professor Henry Robinson on "Sewerage and Sewage Disposal." 8 p.m.

Society of Arts (Cantor Lectures).—Professor Vivian B. Lewes on "The Use of Gas for Domestic Purposes." 8 p.m.

TUESDAY, NOVEMBER 24.

Institution of Civil Engineers.—Dr. Percy F. Frankland on "The Bacterial Purification of Water." 8 p.m.

WEDNESDAY, NOVEMBER 25.

Carpenters' Hall (London Wall).—Professor H. Robinson on "Sanitary Requirements." 8 p.m.

Sanitary Institute (Demonstration for Sanitary Inspectors).—Inspection of the L.C.C. Common Lodging House, Parker-street, Drury-lane. 3 p.m.

Society of Arts.—Mr. W. Worby Beaumont on "Recent Developments in Mechanical Road Carriages." 8 p.m.

THURSDAY, NOVEMBER 26.

Arts and Crafts Exhibition Society.—Mr. Reginald Blomfield on "Public Gardens and Squares." 8.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. Charles Mason on "Scavenging, Disposal of House Refuse." 8 p.m.

Institution of Electrical Engineers.—Continuation of Discussion on Mr. J. Gavey's paper on "The Telephone Trunk Line System in Great Britain." 8 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

19,136.—AUTOMATIC DOOR CLOSING APPARATUS: *F. Dossogne.*—This invention consists of a long tube, containing a helical spring coiled around a piston rod, having at the end a piston. The piston is composed of a flexible cup of leather, &c., in form of a truncated cone, and a metallic disc plate serving as support of same.

21,631.—BRICKS: *F. Julien.*—This invention consists in a mortised or clamped brick with a longitudinal projection and recess, also longitudinal grooves crossing same, intended to secure efficient bond. Half-bricks are provided and a special form for angles.

21,735.—PAVING BLOCKS FOR ROADS, &C.: *A. B. Greig.*—In this invention the blocks comprise a metal sole-plate, on upper surface of which are arranged strips of wood or other material between which asphalt, cement, &c., is filled in. Strips are of triangular section. A solid composite block is thus obtained.

21,758.—ROOFING TILES: *E. Capps.*—The invention embraces two claims, viz.:—(1) Tiles are formed with nibs or projections at their backs adapted to rest on splines, being also provided at the front with tongues, ribs and ridges, so as to form a joint with adjoining tiles; and (2) for strong tiles inventor mixes clean dry sea-sand with Portland cement and moulds tiles in a steel mould.

7,310.—WALLS: *C. J. Schultz.*—In order to prevent dampness in brick walls, the inventor obtains a hollow space for circulation of air beneath plaster, with openings or channels to the external air. This is attained by arrangement on the wall of plates of glass, slate, &c., of suitable form and dimension.

11,738.—PLASTIC BUILDING AND DECORATIVE SUBSTANCES: *H. H. Lake.*—The invention consists in producing an antiseptic substance for building and decorative purposes, which consists in mixing in a carbonic acid water bath an antiseptic chloride with lime, alumina, or magnesia, and adding thereto a suitable filling material in proper proportion.

20,189.—CHIMNEY POTS: *J. S. Cairns.*—The invention consists of (1) a chimney-pot, with a conical top surmounted by louvres, the mouth of which conical end extends a distance above the upper louvre; and (2) a chimney-pot so constructed, which has also in its interior deflectors or wind-ledges reaching from near the bottom to near the top of pipe.

20,293.—METAL HOLDFAST FOR GLAZING GREENHOUSES, &C.: *W. Nott.*—The invention consists in glazing conservatories, greenhouses, &c., by means of sheet-metal holdfasts, serrated on one side or edge for the purpose of driving into the woodwork, and keeping down the glass at all lapped edges of the glass, sufficiently to prevent each pane from sliding down.

NEW APPLICATIONS FOR LETTERS PATENT.

NOVEMBER 2.—24,387, W. Cotter, Preparation of Walls for Pointing.—24,406, A. Cameron, Opening Windows Inwardly.—24,419, E. Shorter and J. Power, Fireproof Flooring Tile.—24 461, J. Nolte, Securing Opened Doors, Windows, &c., in any Required Position Relative to their Frames.—24,467, B. Williams, Chimney Pots.

NOVEMBER 3.—24,503, G. Herbert, Sash Fittings for Sliding Swing Sashes —24,528, W. Cox, Chimney Cowls.—24,572, M. Thonar, Quarrying Apparatus.

NOVEMBER 4.—24,621. J. Bonehill, Cowl or Chimney Pipe.—24,635, F. Cook, Roof Construction.

NOVEMBER 5.—24,709, J. Wrigley & J. Chasseaud, Cleaning Devices for Water-closets.—24,711, R. Hunter, Manufacture of Finely Pulverised Substances, for Use in the Production of Portland Cement, Pigments, &c.—24,713, R. Burton, Draught Excluder for Doors.—24,739, A. Mackie, Sliding Sash Window Frames.—24,772, J. Titley, Wood Boring Machinery.

NOVEMBER 6.—24,871, W. Allchin, Wood Sawing Machines.—24,887, E. Sands, Operating Water-closets, &c., and in Pumps and Valves Applicable to Water-closets, &c.—24,902, A. Gries, Production of Slabs, &c., for Building Purposes.—24,918, L. Messinesi, Drilling or Boring Holes in Wood.—24,927, E. de Haas, Automatic Alarum Bells.—24,936, W. Potter, Mortising Chisels.

NOVEMBER 7.—24,948, J. Andrews & G. Montagnon, Bridges and Girders.—24,979, C. Shore & C. Heap, Instrument for Ascertaining Levels and Angles.—24,981, S. Robertson, Application of the Double Water Valve Principle to Starting of Syphonic Action in Sanitary and Other Fittings.—24,996, R. Ewing, Jointing Drain and Other Pipes.

PROVISIONAL SPECIFICATIONS ACCEPTED.

22,749, S. Hyatt, Fixing the Glass in Windows, Roofs, or Skylights.—23,190, J. Nicholls, Raising, Lowering, and Fastening Window-sashes.—23,215, G. Johnstone, Window-sashes. 23,360.—R. Walker, Artificial Stone Blocks and Building Concrete Walls therewith.—23,559, W. Brown and J. Brunning, Chimney Cowl.—23,724 and 23,725, J. Morton, Glazed Bricks.—23,795, W. Hewitt, Tiles.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

23,848, D. Waller, jun., Sash-fasteners.—25,050, W. Wallace, Water-closet Seats.—27, C. Ower, Casement Windows.—154, F. Cope and H. Owens, Stays for Casements, &c.—8,718, E. Morrice, Liquid Composition for Coating or Preserving Stone, &c.—21,565, R. Brown, Windows.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

October 20.—By SEDGWICK, SON, & WEALL (at Watford).

Watford, Herts.—King-st., "Watford-pl.," and 4 a., f.	£5,500

October 24.—By W. R. NICHOLAS & CO. (at Gloucester).

Little Dean, Glos.—"Dean Hall Farm," 38 a. 2 r. 27 p., f.	820
"The Old Mill," and Enclosures, 16 a. 0 r. 11 p., f.	575
Newnham, Glos.—"Cockshoot Farm," 70 a. 1 r. 6 p., f.	1,375
Three Enclosures, 14 a. 0 r. 31 p., f.	500
Westbury-on-Severn, Glos.—"Poulton Hill Farm," 100 a., f.	2,500

October 26.—By ALFRED RICHARDS.

Waltham Abbey, Essex.—"Honeylands," and 54 a. 0 r. 36 p.	3,975

By THOMAS, PEVER, & MILES.

Battersea.—Usk-rd., "The Somers' Arms" beer-house, f., r. 32*l.*	800
Poplar.—St. Leonard's-rd., "The Cooper's Arms" beerhouse, u.t. 43 yrs., g.r. 3*l.* 3*s.*, r. 40*l.*	760
Victoria Park.—21, Whitepost-lane, f., r. 38*l.*	470

By W. HOUGHTON.

Maida Vale.—Warrington-cres., i.g.r. 76*l.*, u.t. 63 yrs., g.r. 12*l.*	1,440
Walthamstow.—6 and 8, Beulah-rd., f.	545

By J. H. BETHELL (at Forest Gate).

Upton Park.—Plashet-rd., &c., 96 building plots, f.	6,929

October 27.—By Messrs. MITCHELL (at Carlisle).

Flimby, Cumberland.—Gillhead Colliery and Fire Clay Works, 113 a., u.t. 15 yrs., r. 60*l.*	2,500

By E. H. HENRY.

Clapham Common.—West Side, "The Grange," and 4 a., f.	10,000

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
Technical Schools	Longton Corp.	75*l.* 25*l.*	Dec. 31
Schools, &c. Knaresborough	Governors, King James Grammar School	15*l.*	Jan. 1'97
Church Tower (Parish Church), Liskeard, Cornwall	Building Committee	50*l.* 25*l.*	do.
Technical Schools, Green-terrace, Bishopwearmouth	Sunderland Corp.	100*l.* 50*l.* 25*l.*	Jan. 16

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Kerbing, Making-up, &c. Montague-av.	Lewisham B. of W.	Surv. Dept. Office, Catford	Nov. 24
*Kerbing, Making-up, &c. Adelaide-rd.	do.	do.	do.
Stoneware Drains, &c.	Southampton Corp.	W. B. G. Bennett, Boro' Engr.	do.
Haslingden Flags	Runcorn U.D.C.	E. Marshall, Sec. Town Hall	do.
Kerbing, Pitching, Paving Bricks, &c.	Tonbridge (Kent) U.D.C.	W. L. Bradley, Surv. Council Offices, Tonbridge	do.
Church, Castlemaine, co. Kerry	Rev. Jas. Counihan	W. G. Doolin, Archt. Dawson-chambers, Dublin	do.
Two Semi-detached Villas, Grimsby	.....	W. C. Butler, Welholme-road, Grimsby	do.
*Schools, Farnborough	.....	C. Smith & son, Archt. Reading	do.
Additions, &c. Wenlock Laundry, Ambrose-street, York	.....	G. H. F. Jones, Archt. 8, Lendal, York	Nov. 25
Street Works, Tranmere, &c.	Birkenhead Corp.	C. Brownridge, C.E. Town Hall	do.
Paving, Flagging, &c. several passages	do.	do.	do.
Street Works, Uridge-road	Tonbridge U.D.C.	W. L. Bradley, Surv. Council Offices, Tonbridge	do.
Road Works, Sandwell-street, &c.	Walsall Corporation	Boro' Surv. Bridge-street, Walsall	do.
Sewers (1,200 yds.)	Bervie (N.B.) T. C.	J. Sim, C.E. 160, High-street, Montrose	do.
Extension, &c. Town Hall	Eccles (Lancs) T. C.	Mr. Bagot, Archt. 27, Brazenose-st. Manchester	do.
Paving, Kerbing, &c. Handen-road	Lee Board of Works	G. Whale, Board Offices, Old Charlton, Kent	do.
Surveyor's Materials	Hartlepool Corp.	H. C. Crummack, C.E. Town Hall	do.
*Making Road, &c.	Met. Asylums Board	Pennington & Son, Hastings House, Norfolk-st. W.C.	Nov. 26
Additions to Brewery	Portsmouth United Breweries, Ltd.	Sec. Offices, Eldon-street, Portsmouth	do.
Warehouse, &c. Hyde-road, Manchester	Slack & Cox, Ltd.	W. W. Kenworthy, Archt. 7, Chapel-walk	do.
Wesleyan Chapel, Mundesley-on-Sea, Norfolk	.....	Rev. J. S. Prior, Bacton-road, North Walsham	do.
Vicarage, Heatley, Stockport	.....	Wright & Sons, Surv. Lancaster	Nov. 27
Business Premises, High Pittington, Durham	.....	W. & T. R. Milburn, Archt. 20, Fawcett-st. Sunderland	do.
Sewerage Works, &c.	Thurlstone (Yorks) U.D.C.	J. A. Murray, C.E. Independent-bldgs. Sheffield	do.
Pipe Sewer	Westhoughton (Lancs) U.D.C.	T. Partington, Surv. Council Offices	do.
Reservoir, Drains, &c. Fivemile Town, Ireland	Clogher Union	J. L. D. Meares, C.E. Town Hall, Newry	Nov. 28
Street Works, St. Andrew's-road South, &c.	St. Anne's-on-Sea U.D.C.	T. Bradley, Clerk, Park-road, St. Anne's-on-Sea	do.
Additions to Schools	Thornton (Lancs) Sch. Bd.	R. B. Mather, Archt. Lytham-st. Blackpool	do.
Rectory, St. Sennen, Cornwall	Rev. J. H. Mitchell	O. Caldwell, Archt. Victoria-sq. Penzance	do.
Villa, Stabling, &c. Pearson-lane, Allerton	.....	Fairbank & Wall, Archts. Otley, Yorks	do.
Shed (2,000 yards) nr. Harehills-lane, Leeds	.....	A. E. Dixon, Archt. 8a, Park-lane, Leeds	Nov. 30

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Alterations, &c. to Schools, Middle Rhymney, Mon.	Bedwellty Sch. Bd.	D. Morgan, Archt. Cardiff	Nov. 30
*Guernsey Granite	Rotherhithe Vestry	J. J. Stokes, Vestry Offices, Lower-rd. Rotherh'he, S.E.	do.
C.-I. Sewer-pipes, Laying, &c.	Hanley (Staffs) Corp.	J. Lobley, Boro' Engineer, Town Hall	do.
Water and Sewerage Works, Belthorn, Lancs.	Oswaldtwistle U.D.C.	R. N. Hunter, Surv. Town Hall	do.
Paving, Draining, &c. Crabble-road	Dover T. C.	E. W. Knocker, Town Clerk	Dec. 1
Cemetery Chapels, &c. Moss Brook	Widnes Corp.	J. S. Sinclair, C.E. Town Hall	do.
*Building Bridge, Alterations, &c. to Road	Dover Town Council	Boro' Engr. Town Hall	do.
Kerbing, &c. Bridgford-road	West Bridgford (Notts) U.D.C.	A. Smithies, C.E. Trent Boulevard, W. Bridgford	Dec. 2
Levelling, Metalling, &c. South-road	Weybridge U.D.C.	G. Wheeler, Council Offices	do.
Steel Piles	Belfast Water Commrs.	L. L. Macassey, C.E. Offices, Belfast	do.
Subway, Port Clarence, co. Durham	N.E Ry. Co.	W. J. Cudworth, Engr. Darlington	do.
Drainage Works, The Harrow, Hollington, Sussex	Battle R.D.C.	H. Blackman, Surv. Catefield, Battle	Dec. 3
Iron Buildings, North Wales Asylum, Denbigh	Visitors	W. Barker, Clerk, Offices, Denbigh	do.
Engine House, &c. Hipperholme, Yorks	.....	R. Berry, Archt. Arcade-chambers, Halifax	do.
*Sea Wall, Esplanade, Roadway, &c.	Southend-on-Sea Corp.	B. Harlock, Town Hall	do.
*Electric Generating Station, &c.	Southampton Corp.	Kincaid, Waller, & Manville, 29, St George-st. S.W.	Dec. 4
*Various Stores	G. N. Railway.	Mr. Martin, Stores Superintendent, Doncaster	Dec. 5
Sheds, &c. Schools, Upper Cwmbran, Wales	Llanvrechfa Upper Sch. Bd.	Lansdowne & Griggs, Archts. Newport, Mon.	do.
Sewage Works, Rhodes Farm, Ringley	Bolton Corp.	Hinnell & Murphy, C.E. 41, Corporation-st. Manchester	do.
*Erecting Malthouse	Bath Brewery, Ltd.	F. W. Gardiner, Archt Bath	do.
*Sewerage	Hendon U.D.C.	S. Slater Grimley, The Burroughs, Hendon, N.W.	Dec. 7
Bank, Shop, &c. Tuel-lane, Sowerby Bridge	Yorkshire Penny Bank	Ronstad & Williams, Archts. Halifax	do.
*Post office, Epsom	Com. of H.M. Works	12, Whitehall-place, S.W.	do.
Schools, Lovewell-road, Kirkby	Lowestoft Sch. Bd.	K. B. Nicholson, Clerk, Lowestoft	do.
Hotel Buildings, Neath	E. E. Bevan	Lambert & Rees, Archts. Neath	Dec. 9
*Roadmaking	Kingston-on-Thames Corp.	Boro' Surv. Clattern House, Kingston	do.
Chimney (70 yds.) near Burnley-road	Colne (Lancs) Corp.	T. H. Hartley, Boro' Surv. Town Hall	do.
*Stables, House, Mortuary, &c.	Dartford U.D.C.	W. Barston, High-street, Dartford, S.E.	Dec. 16
Kerbing and Channelling	Hipperholme (Yorks) R.D.C.	Clerk, Council Offices, Whitehall, Hipperholme	Dec. 31
Drill Hall, Leeds	Medical Staff Corps	W. Bakewell, Archt. 28, Park-square, Leeds	No date
House, &c. at Intermediate School, Porth, Wales	Governors	J. Rees, Archt. Pentre, R.S.O. Glam.	do.
Chancel and Vestries, St. Nicholas Church, Newchurch, Lancs	.....	Preston & Vaughan, Diocesan-chambers, Manchester	do.
Additions, &c. Glendoe Lodge, Fort Augustus, Inverness	.....	D. Cameron, Archt. Inverness	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
Surveyor	Ashton-in-Makerfield U.D.C.	150*l.* per annum	Nov. 30
*Architectural Draughtsman	Liverpool Corp.	120*l.* rising to 160*l.* per ann.	Dec. 4

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p. iv.* *Contracts, pp. iv., vi., & viii.* *Public Appointments, pp. xvi. & xix.*

Windmill-rd., "Ivanhoe," u.t. 74½ yrs., g.r. 27*l.*, r. 90*l.* £805

By E. & H. Lumley.

Regent-st.—8, Argyll-st., f., r. 200*l.* 5,000

By Worsfold & Hayward.

Kensington.—26, Ovington-sq., u.t. 28 yrs., g.r. 10*l.* 10s., r. 100*l.* 1,060

2, Montpelier-st., u.t. 7½ yrs., g.r. 3*l.*, r. 55*l.* 205

By G. Head & Co.

Edgware-rd.—Nos. 484 and 488, with stabling, u.t. 12¾ yrs., g.r. 70*l.*, r. 188*l.* 18s. 420

Maida Hill.—24, Aberdeen-pl., u.t. 26½ yrs., g.r. nil, e.r. 65*l.* 455

26 and 28, Aberdeen-pl., u.t. 26 years, g.r. 22*l.* 5s. 7d., r. 112*l.* 610

14, Northwick-mews, and l.g.r. 4s., u.t. 26½ yrs., g.r. 5*l.* 120

Marylebone.—1, Melcombe-pl., u.t. 12¾ yrs., g.r. nil, r. 95*l.* 490

29, Devonshire-st., u.t. 25¼ yrs., g.r. 36*l.*, r. 140*l.* 1,100

By Harman Bros. (at Upton Park).

Upton Park.—Nevill-rd., 12 plots of building land, f. 876

By G. Loveitt & Son (at Coventry).

Berkswell, Warwick.—"Banner Farm," 15 a. 3 r. 15 p., c. 1,120

Foleshill, Warwick.—Foleshill-rd., five freehold houses 825

9 and 10, Highfield-st., f. 285

1 to 16, Station-st., f. 2,709

Coventry, Warwick.—92, 93, and 94, Spon-st., and six tenements in rear, f. 600

5, 6, 8 and 9, Sherbourne-st., f. 260

October 28.—By Baker & Sons.

Brixton.—97, Dalywell-rd., u.t. 75 yrs., g.r. 6*l.* 10s., r. 30*l.* 285

By Hancock, Henley & Slade.

Cold Norton, Essex.—"Beacon Hill," and 7 a., f. 410

By R. Tidey & Son.

Balls Pond.—7, 8, 9 and 10, Canterbury-ter., f., r. 135*l.* 12s. 1,500

By F. Varley.

Finsbury Park.—2, Brownswood-rd., u.t. 79 yrs., g.r. 7*l.* 7s., r. 42*l.* 445

By Field & Sons.

Paddington.—Somers-mews, "The Mitre" Public House, u.t. 40 yrs., g.r. 12*l.*, r. 100*l.* 1,400

Rotherhithe.—38 and 40, Ainsty-st., f., r. 31*l.* 4s. 160

56, Ainsty-st., f., r. 16*l.* 18s. 110

Brixton.—21, 25, 27, 41 and 43, Geneva-rd., u.t. 70 yrs., g.r. 30*l.*, r. 166*l.* 1,280

Penge.—2, 4, 6 and 8, Evelina-rd., u.t. 70 yrs., g.r. 20*l.* £500

By Hepper & Sons (at Leeds).

Leeds.—15 to 23 (odd), Hollis-st., and 16 to 24 (even), Jermyn-st., f. 1,250

1, Lower Hanover-st., f. 256

By H. F. Russell (at Hereford).

Hampton Bishop, Hereford.—"The Field Farm," 251 a. 1 r. 30 p., f. 11,200

By Hussey & Son (at Okehampton).

Lydford, Devon.—"The Dartmoor Inn," and 25 a. 0 r. 28 p., f. 3,000

Lower Downtown Farm, 185 a. 3 r. 2 p., u.t. 99 yrs., g.r. 1*l.* 2,335

Various enclosures of land, 10 a. 1 r. 36 p., f. 645

Town End Farm, 65 a. 1 r. 2 p., f. 2,220

"The Castle Inn" and 14 a. 3 r. 11 p., f. 2,400

Three cottages and 1 r. 35 p., f. 320

Peter Tavy, Devon.—Moiety of Kitts Mine Field, 19 a. 2 r. 10 p., f. 140

Bridestowe, Devon.—Battishall Farm, 285 a. 0 r. 27 p., f. 2,500

Five-eighths of Fernworthy and Fernworthy Down, 243 a. 1 r. 18 p., f. 1,025

October 29.—By Beard & Son.

Bayswater.—24, Westmoreland-rd., u.t. 50 yrs., g.r. 10*l.* 10s., r. 56*l.* 425

Marylebone.—23 and 24, Little Marylebone st., u.t. 4½ yrs., g.r. 40*l.* 160

By Charles Hall.

Peckham.—109, 111, and 113, Albert-rd., f. 1,095

By Hatch & Hatch.

Catford.—29 and 46, Ravensbourne-rd., f., r. 58*l.* 680

Croydon.—9, Mayday-rd., u.t. 59 yrs., g.r. 7*l.* 7s., e.r. 30*l.* 150

Sydenham.—Perry Hill, "Harold Villa," "Agnes Villa," "Dulce Domum," "Belmont," and "Perry Villa," f., r. 131*l.* 8s. 1,020

By Newbon & Co.

Highbury.—69 and 71, Highbury-quadrant, u.t. 53 yrs., g.r. 15*l.*, r. 84*l.* 650

210, Blackstock-rd., f., r. 22*l.* 390

Islington.—70, 72, and 74, Queensbury-st., u.t. 14¼ yrs., g.r. 9*l.*, r. 72*l.* 210

Canonbury.—12, 14, 15, and 17, Wallace-rd., u.t. 29¾ yrs., g.r., 29*l.* 8s., r. 183*l.* 1,140

Dulwich.—209, Lordship-lane, u.t. 70 yrs., g.r. 5*l.*, r. 40*l.* 380

By W. W. Read & Co.

Gospel Oak.—100, Mansfield-rd., u.t. 72 yrs., g.r. 7*l.* 10s., r. 52*l.* 10s. 615

By J. Hibbard & Sons.

Stepney.—5, 8, 10, and 14, Antcliff-st., u.t. 31¾ yrs., g.r. 14*l.*, r. 104*l.* £915

1, Newbold-st., u.t. 31¾ yrs., g.r. 3*l.* 10s., r. 26*l.* 200

21, Newbold-st., u.t. 34¼ yrs., g.r. 4*l.*, r. 26*l.* ... 205

30, Bromehead-st., u.t. 34¼ yrs., g.r. 4*l.*, r. 26*l.* 200

Hornsey.—14, Carlingford-rd., u.t. 87 yrs., g.r. 6*l.* 5s., r. 36*l.* 310

Stoke Newington.—8, 10, and 14, Northwold-rd., u.t. 84 yrs., g.r. 22*l.* 10s., r. 118*l.* 1,170

58, Norcott-rd., u.t. 84 yrs., g.r. 7*l.* 10s., r. 39*l.* 395

By Ernest Owers.

Hampstead.—Sumatra-rd., f.g.r. 13*l.*, reversion in 91 yrs. 370

Islington.—23, Frome-st., u.t. 48½ yrs., g.r. 4*l.*, r. 26*l.* 10s. 315

By C. P. Whiteley.

Blackfriars.—28 to 42 (even), Broadwall, c., r. 284*l.* 14s. 2,650

Broadwall, a freehold rental of 240*l.* 4,320

By Worsfold & Hayward (at Dover).

Dover.—27, Liverpool-st., u.t. 20½ yrs., g.r. 1*l.* 8s. 6d., r. 36*l.* 250

By Stimson & Sons.

Norwood.—Chapel-rd., f.g.r. 11*l.*, reversion in 18 yrs. 300

Curnick's-lane, f.g.r. 24*l.*, reversion in 48 yrs. ... 770

Dockhead.—Coxson's-pl., &c., f.g.r. 53*l.* 0s. 6d., reversion in 32 yrs. 1,600

Bermondsey.—George-row, f.g.r. 21*l.*, reversion in 32 yrs. 680

Rotherhithe.—Adam-st., f.g.r. 32*l.*, reversion in 41 yrs. 860

Stratford.—Francis-st., f.g.r. 3*l.*, reversion in 21 yrs. 150

Welling, Kent.—Bell Grove-villas, f.g.r. 7*l.* 10s., reversion in 40 yrs. 255

Limehouse.—59, Conder-st., c. 155

Islington.—102, Shepperton-road, and 2, Oxford-rd., u.t. 21½ yrs., g.r. 7*l.* 16s., r. 70*l.* 500

Paddington.—11, Kensal-rd., u.t. 70¾ yrs., g.r. 7*l.*, r. 48*l.* 385

Westminster.—58, Great Peter-street, f., r. 42*l.* ... 410

Bermondsey.—219 and 221, Lynton-rd., u.t. 52½ yrs., g.r. 12*l.*, r. 67*l.* 12s. 500

Walworth.—13, 15, 17, 19, Cook's-rd., u.t. 52 yrs., g.r. 20*l.* 1,000

Lambeth.—46, Westminster Bridge-rd., f. 460

56 and 57, Turner-st., 35, 36, and 37, Dodson-st., u.t. 16 yrs., g.r. 20*l.*, r. 146*l.* 8s. 210

Old Kent-road.—1 to 13 (odd), Bronte-pl., u.t. 49½ yrs., g.r. 26*l.* 5s. £770

By HARLAND & SON (at Potters Bar).

Potters Bar, Middlx.—High-rd., "Hillside," and 5 a. 1 r. 39 p., f., r. 100*l.* 2,500

Ganwick Corner, three cottages, f. 335

Arkley, Herts.—"Arkley Windmill," and 1 r. 9 p., c., r. 36*l.* 360

By Messrs. BIDWELL (at Ely).

Littleport, Cambs.—Camel Fen, Enclosures of Land, 45 a. 1 r. 32 p., f. 1,100

OCTOBER 29 & 30.—By DOUGLAS YOUNG (at Ilford).

Ilford, Essex.—Ley-st., 35 plots of land, f. 1,755

Thorold-rd., 33 plots of land, f. 1,588

Brisbane-rd., 11 plots of land, f. 590

Balfour-rd., 117 plots of land, f. 6,440

Wellesley-rd., 21 plots of land, f. 1,425

Melbourne-rd., 51 plots of land, f. 1,972

Toronto-rd., 16 plots of land, f. 880

Coventry-rd., 22 plots of land, f. 920

Auckland rd., 95 plots of land, f. 3,957

October 30.—By LEOPOLD FARMER.

187, Oxford-st., u.t. 12¾ yrs., g.r. 4*l.* 107

By JONES, LANG & Co.

Strand.—6, Angel-court, f., r. 58*l.* 10s. 700

By MILLAR, SON & Co.

Regent's Park.—30, Park-rd, f. 1,800

St. John's Wood.—14 and 15, New-st., u.t. 31 yrs., g.r. 8*l.*, r. 72*l.* 725

Paddington.—96 and 98, Hall-pl., u.t. 42 yrs., g.r. 14*l.* 14s. 840

By SALES & WILTSHIRE.

Lee.—31, Blessington-rd., u.t. 56 yrs., g.r. 12*l.*, e.r. 60*l.* 300

By SEGRAVE, BROWETT, & TAYLOR.

Kentish Town.—117 and 119, Carlton-rd., u.t. 54½ yrs., g.r. 12*l.*, r. 70*l.* 678

101 and 103, Weedington-rd., u.t. 60 yrs., g.r. 18*l.*, r. 80*l.* 562

Thornton Heath.—117, Bensham Manor-rd., f., e.r. 40*l.* 420

Norwood.—8 and 10, Colby-rd., u.t. 70 yrs., g.r. 15*l.*, r. 62*l.* 410

Oxford-st.—74, Wells-st., u.t. 35 yrs., g.r. 20*l.*, r. 105*l.* 715

Bow.—2, Ordell-rd., u.t. 51 yrs., g.r. 3*l.* 3s. 239

Forest Gate.—107, Ramsay-rd., u.t. 89¼ yrs., g.r. 4*l.* 15s. 173

Camberwell.—106, Southampton-st., f., e.r. 30*l.* ... 280

By J. H. HIBBARD.

Hammersmith.—52, Sterndale-rd., u.t. 84 yrs., g.r. 7*l.*, e.r. 45*l.* 390

Stoke Newington.—4, 5, 7, 11, 12, 13, Mildmay-st., u.t. 60¾ yrs., g.r. 30*l.*, r. 164*l.* 1,380

14, Mildmay-st., u.t. 55 yrs., g.r. 5*l.* 5s., r. 28*l.* 235

61 to 67, Mildmay-st., u.t. 60¾ yrs., g.r. 35*l.* r. 192*l.* 1,710

Islington.—3, Quadrant-rd, u.t. 49 yrs., g.r. 9*l.*, r. 46*l.* 405

4, Ashby-rd., u.t. 39 yrs., g.r. 7*l.*, r. 49*l.* 600

121, Englefield-rd., u.t. 41 yrs., g.r. 6*l.*, r. 46*l.* 400

10, Oakley-rd., u.t. 42 yrs., g.r. 6*l.*, r. 42*l.* 375

146, Church-rd., u.t. 41 yrs., g.r. 4*l.* 15s., r. 42*l.* 430

Holloway.—41 and 42, Medina-rd., u.t. 64 yrs., g.r. 4*l.* 10s., r. 64*l.* 630

Brixton.—24, Cranmer-rd., u.t. 4½ yrs., g.r. 5*l.*, r. 50*l.* 120

Islington.—25, Dorinda-st., f., r. 30*l.* 425

Ashby-rd., l.g.r. 20*l.*, u.t. 39 yrs., g.r. nil. 360

Stoke Newington —Mayville-gr., l.g.r. 13*l.*, u.t. 63 yrs., g.r. nil. 230

Holloway.—Mulkern-rd, f.g.r. 12*l.*, reversion in 71 yrs. 330

Ealing.—Ranelagh-rd., f.g.r. 5*l.*, reversion in 70¾ yrs. 165

By G. B. HILLIARD & SON (at Chelmsford).

Galleywood, Essex.—"Gun Hall," and 15 a. 3 r. 10 p., f. 300

By W. G. WOOD (at Aldershot).

Aldershot, Hants.—High-st., a corner building site, f. 110

1 to 5, Sebastopol-rd., f. 1,335

133, Artillery-ter., f., r. 39*l.* 450

1, 2, and 3, Walmer Villas, f. 650

1 and 2, Victoria Villas, f., r. 39*l.* 450

OCTOBER 31.—By BRUTON, KNOWLES & FRIDAY (on Premises).

Gloucester, Northgate-st., "The Spread Eagle" Hotel, f. 8,650

November 2.—By BRUTON, KNOWLES, & PRIDAY (at Cirencester).

Oaksey, Wilts.—"The Lower Moor Farm," 123 a. 3 r. 18 p., f. 1,800

November 3.—By DEBENHAM, TEWSON, & Co.

Bermondsey.—Law-st., "The Golden Fleece" public-house, f., r. 14*l.* 820

By RUTLEY, SON, & VINE.

Hampstead-rd.—167, Stanhope-st., u.t. 41½ yrs., g.r. 2*l.* 620

Holloway.—21 and 23, Rupert-rd., u.t. 67½ yrs., g.r. 10*l.* 365

By BEALE & CAPPS.

Kensington.—15 and 17, Ball-st., u.t. 53 yrs., g.r. 30*l.*, r. 170*l.* 2,200

Notting Hill.—St. Ann's-rd., &c., f.g.r. 10*l.*, reversion in 66 yrs. 315

By BROAD & WILTSHIRE.

Southwark.—Melior-st., corner warehouse premises, u.t. 61¼ yrs., g.r. 110*l.*, r. 425*l.* 3,500

By C. W. DAVIES.

Crouch Hill.—27, Sparsholt-rd., u.t. 50 yrs., g.r. 5*l.* 10s., r. 30*l.* 270

Commercial-rd. East.—81, Watney-st., u.t. 23½ yrs., g.r. 20*l.*, r. 40*l.* 200

Canonbury.—20, Astey's-row, u.t. 22 yrs., g.r. 4*l.*, r. 45*l.* 275

By G. LOVEITT & SON (at Coventry).

Coventry (near), Warwick.—"The Coundon House Estate," containing 33 a. 2 r., f. 6,900

By M. DEROME & SON (at Kendal).

Helsington, Westmoreland.—"Hawes Farm," 198 a. 3 r. 36 p., f. 7,820

Natland, Westmoreland.—"Natland High House" Farm, and "Natland Low House" Farm, 88 a. 3 r. 11 p., f. 4,900

November 4.—By BRAY, DICKINS, & Co.

Hackney Wick.—White Post-lane, &c., f.g.r. 200*l.*, reversion in 63 yrs. 6,100

Old Ford.—Roman-rd., &c., f.g.r. 180*l.*, reversion in 66 yrs. 4,900

Canning Town.—Hemsworth-st., f.g.r. 10*l.*, reversion in 90 yrs. £220

By FLINT & PITT.

Marylebone.—36, Great Marylebone-st., u.t. 4½ yrs., g.r. 35*l.* 155

By RAMSEY BROS.

Kensington.—30, 32, and 34, St. Katherine's-rd., u.t. 62 yrs., g.r. 12*l.* 225

By M. DEROME & SON (at Kirkby Lonsdale).

Casterton, &c., Westmoreland.—"The Gowry and Park House Estates," 1,102 a. 3 r. 29 p., f. ... 16,810

November 5.—By HARDS & BRADLY.

Blackheath.—Beaconsfield-ter., f.g.r. 40*l.*, reversion in 90 yrs. 1,060

Lewisham.—9, Glenview-rd., u.t. 32 yrs., g.r. 5*l.* 10s. 100

By NEAVE & Co.

Mile End.—36, Clinton-rd., f., r. 23*l.* 8s. 255

Brixton.—187 and 189, Brixton-rd., u.t. 4½ yrs., g.r. 16*l.* 110

By YOUNG & GILLING (at Cheltenham).

Cheltenham, Gloucester.—Cleeve-rd., two enclosures, 5 a. 1 r. 8 p., f. 1,560

Chestnut-drive, enclosures of land, 13 a. 0 r. 27 p., f. 1,295

The "Marle Hill Estate," 36 a. 3 r. 2 p., f. 5,250

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.

Greenheart, B.G.	ton	£ s. d. 8/0/0 0/0/0
Teak, E.I. ..load		11/10/0 16/10/0
Sequoia, U.S.ft.cu		2/0 2/1
Ash, Canada load		2/15/0 4/0/0
Birch, do.		3/5/0 5/0/0
Elm, do.		3/10/0 4/15/0
Fir, Dantsic, &c..		2/5/0 4/5/0
Oak, do.		2/15/0 3/15/0
Canada		4/10/0 5/10/0
Pine, Canada red		0/0/0 0/0/0
Do. Yellow		2/5/0 4/5/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg..		5/0/0 6/10/0
Wainscot, Riga &c., log...		2/5/0 4/10/0
Odessa, crown....		2/5/0 4/10/0
Deals, Finland snd & rst std 100		8/0/0 8/10/0
Do. 4th & 3rd ..		8/0/0 8/0/0
Do. Riga		6/10/0 7/10/0
St. Petersburg, 1st yellow....		10/0/0 12/10/0
Do. 2nd yellow		9/0/0 10/0/0
Do. white		8/10/0 10/10/0
Swedish.....		8/0/0 16/0/0
White Sea.....		9/10/0 15/0/0
Canada, Pine 1st		22/10/0 24/0/0
Do. do. 2nd		15/0/0 17/0/0
Do. do. 3rd, &c.		7/0/0 9/10/0
Do. Spruce, 1st.		7/5/0 8/10/0
Do. do. 3rd and 2nd		7/5/0 8/10/0
New Brunswick		7/0/0 7/10/0
Battens, all kinds		5/0/0 20/0/0
Flooring boards, sq., 1 in. prep. 1st.		0/0/0 0/16/0
Do. 2nd.....		0/8/0 0/12/6
Other qualities—		0/6/0 0/7/6
Cedar, Cuba, .ft.		/4½ /5
Honduras, &c.		/4 /5
Mahogany, Cuba		/4½ /6
St. Domingo cargo av.		/4½ 1/3
Mexican, do. do.		/4 /5
Tobasco, do. do.		/5 /7
Honduras, do. ..		/5 /6½
Box, Turk'y ton		4/0/0 15/0/0
Rose, Rio.....		7/0/0 18/0/0
Bahia		6/0/0 15/0/0
Satin, St. Doming		0/0/7 0/1/0

TIMBER (*continued*).

Satin, Porto Rico		0/0/7 0/1/6
Walnut, Italian ..		0/0/3 0/0/7

METALS.

Iron—Pig, in Scotland .....ton		2/9 2 2/9/5½
Bar, Welsh, in London		5/15/0 5/17/6
Do. do. at works in Wales.....		5/10/0 5/12/6
Do. Staffordshire, in London.....		5/13/0 6/10/0
COPPER—British cake and ingot		51/0/0 52/10/0
Best selected ..		54/5/0 54/15/0
Sheets, strong..		58/10/0 59/10/0
Chili bars		49/7/6 49/12/6
YELLOW METAL		0/0/5 0/0/5½
LEAD—Pig, Spanish ....ton		11/11/3 11/12/6
English com. brands		11/12/6 11/15/0
Sheet, English 6 lbs. per sq. ft and upwards ..		12/15/0 0/0/0
Pipe		13/5/0 0/0/0
ZINC—English sheet.....ton		20/10/0 0/0/0
Vieille Montagne		21/10/0 0/0/0
Spelter		18/0/0 18/2/6
TIN—Straits		58/16/3 0/0/0
Australian.....		60/7/6 0/0/0
English Ingots..		63/0/0 64/0/0
Banca		60/10/0 61/0/0
Billiton		59/15/0 60/0/0

OILS.

Linseed .....ton		16/0/0 0/0/0
Cocoanut, Cochin		28/10/0 0/0/0
Do. Ceylon		24/5/0 0/0/0
Palm, Lagos		24/10/0 0/0/0
Rapeseed, English pale		28/0/0 0/0/0
Do. brown		27/10/0 0/0/0
Cottonseed ref. ..		26/15/0 27/15/0
Oleine.....		19/0/0 20/0/0
Lubricating U.S.		0/6/3 0/7/6
Do. black		0/4/9 0/6/6
TAR—Stockholm barrel		22/0 0/0/0
Archangel.....		0/12/6 0/0/0
Turpentine....ton		21/2/0 0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender: and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

ABERDEEN.—Accepted for the erection of the south wing of the University Buildings. Mr. A. Marshall Mackenzie, architect, Aberdeen:—

Masonry—J. Gauld, Aberdeen	£4,236 0 0
Carpentry.—D. Macandrew & Co.	1,713 0 0
Slating—A. Adam & Co.	119 15 0
Plumbing.—J. Blaikie & Sons	419 12 6
Painting and Glazing.—J. Whyte	544 0 0
Plastering.—Stephen & Gibb	1,229 19 0
Iron.—J. Grant	173 10 6
Electric Lighting.—Shinas, Laing, & Co.	257 19 0

ABERDEEN.—For the execution of street works, Rubislaw and Torry, for the Aberdeen Land Association, Limited. Messrs. Walker & Duncan, C.E., 3, Golden-square, Aberdeen:—

Torry.

J. Leith, jun.	£3,097	1	9
G. Pirie	2,926	4	6
A. McKay	2,772	16	6
P. Tawse	2,733	19	0
W. Durward	2,724	19	5
J. Fyfe	2,705	2	11
J. McPetrie	2,692	3	6½
J. Bain	£2,662	15	5
R. McKay	2,638	17	6
Gall & Walker	2,188	19	0
J. McAdam & Sons, Aberdeen*	2,020	15	6
C. Ritchie	1,673	18	9

* Accepted.

Rubislaw.

G. Pirie	£2,469	18	2
W. Durward	1,939	13	1
J. McPetrie	1,880	3	0
P. Tawse	1,622	14	10
R. McKay	1,463	4	3
J. Fyfe	1,437	5	0
A. McKay	£1,430	18	0
Gall & Walker	1,212	4	1
J. Bain	1,167	5	1
J. McAdam & Sons Aberdeen*	1132	2	6
C. Ritchie	1013	17	7

* Accepted.

ABERTHAW (Wales).—For the erection of a mission-room. Messrs. Seddon & Carter, architects, Bank-buildings, St. Mary-street, Cardiff:—

E. C. Mebby	£452	0	0
J. S. Shepton	321	19	0
Oliver Purnell	285	0	0
David Raymond	279	6	0
C. H. Cooksley	277	13	0
Wm. James & Sons, Fonmon, Cowbridge.*	£253	13	4
C. H. Hurst	250	0	0
Hains Bros.	245	0	0

* Accepted.

ALDERSHOT.—For boys' school, to accommodate 580, with board and waiting rooms in Queen's-road, for Aldershot School Board. Messrs. Nash & Son, architects, Farnham. Quantities by Mr. A. Beymer, 22, Surrey-street, Strand, W.C.:—

	School Buildings, Board, Waiting-rooms, Latrines, Playgrounds, Covered Shed, Fencing, Drainage, &c.	Extra if playground tar-paved.
	£ s. d.	£ s. d.
Bottrill & Son	8,343 13 9	399 3 0
Jenkins & Son.....	8,343 0 0	397 0 0
Pond	7,995 0 0	390 0 0
Peters & Son	7,800 0 0	432 9 0
Snuggs	7,777 0 0	433 0 0
Garland	7,596 15 0	404 0 0
Martin, Wells, & Co.	7,590 0 0	360 0 0
Wallis.....	7,549 0 0	345 0 0
Hughes	7,452 7 10	386 6 0
Kemp, Aldershot*....	7,369 0 0	312 0 0
Tompsett & Co.	7,265 0 0	350 0 0
Hughes	7,230 2 5	302 2 8
Fitt	7,227 0 0	305 0 0
Architect's estimate..	7,184 0 0	308 0 0

* Accepted.

BRIDLINGTON QUAY.—For the erection of four houses, Marshall-street, for Mrs. M. E. Lowson. Mr. J. Earnshaw, architect, Wellington-road, Bridlington Quay:—

R. Bailey	£1,920	T. Wood	£1,630
J. H. Hudson	1,825	J. Rennard (accepted)	1,600

[All of Bridlington Quay].

CHEPSTOW.—For the erection of chancel at the church of St. Mary, for the Restoration Committee. Messrs. Seddon & Carter, architects, Bank-buildings, St. Mary's-street, Cardiff. Quantities by Mr. J. Coates Carter:—

Howell & Co.	£2,276	A. King	£1,797
H. Willcock & Co.	2,248	Rees & Thomas	1,700
D. C. Jones & Co.	2,067	Horton & Co., Taunton*	1,695
J. Linton	2,025		

* Accepted.

DEAL.—For the supply of road metalling (800 yards broken pit flints and 200 yards Kentish rag), for the Corporation. Mr. T. C. Golder, Borough Surveyor, Deal:—

	Per yard cube. s. d.	
R. L. Knight & Co., Ltd.	8 2	for picked flints.
W. & E. Earl	8 0	for Kentish rag.
G. Burton	7 0	for pit flints.
W. Clark	6 6	for pit flints.
G. W. Bass, Hillside Farm, Great Mongeham (accepted)	6 5	for pit flints.

LEEDS.—Accepted for erecting baths, Leeds. Mr. Walter Hanstock, architect, Leeds:—

Holbeck-lane.

Masons.—Wright, Leeds	£4,000	0	0
Joiners.—Oakes & Son, Leeds	1,160	0	0
Plumbers.—W. & C. Barraud, Leeds	198	0	0
Engineers.—Braithwaite & Co., Leeds	300	10	0
Fireproofers.—S. McFarlane, Leeds	748	16	0
Ironfounders.—W. Horsfall & Co., Leeds	272	11	0
Plasterers.—Branton & Co., Leeds	66	10	0
Platers.—Shevill, Leeds	265	18	0
Patent Glaziers.—Hellewell & Co., Brighouse	83	0	0
Painters.—J. Gaunt, Leeds	78	0	0

Hunslet.

Masons.—G. Oakes & Son, Leeds	4,150	0	0
Joiners.—Mason & Son, Leeds	1,257	0	0
Plumbers.—P. Newton, Leeds	186	0	0
Engineers.—Braithwaite & Co., Leeds	920	7	0
Fireproofer.—S. McFarlane, Leeds	732	7	5
Ironfounder.—Hargreaves & Dewhurst, Bradford	292	0	0
Plasterer.—R. Branton & Co., Leeds	62	12	0
Plater.—Shevill, Leeds	237	5	0
Patent Glazier.—Hellewell & Co., Brighouse	82	0	0
Painter.—Dearden Bros., Leeds	82	0	0

LONDON.—For the completion of four houses at West Green, Tottenham. Mr. George F. Sharpe, architect and surveyor, 57 & 58, Chancery-lane, W.C.:—

W. Went	£400	S. Wright & Co.	£340
J. T. Bassano	393		

LONDON.—For the completion of four carcases at West Green, Tottenham. Mr. George F. Sharpe, architect and surveyor, 57 & 58, Chancery-lane, W.C.:—

W. Went	£489	S. Wright & Co.	£460
J. T. Bassano	487		

LONDON.—For alterations and fittings for No. 12, West Kensington-terrace. Mr. George F. Sharpe, architect and surveyor, 57 and 58, Chancery-lane, W.C.:—

S. Wright & Co.	£187	J. T. Bassano	£179
Buckeridge Bros.	181	S. Polden	149

LONDON.—For road and paving works, Poplars-close and mews, Willesden Green, for the Willesden District Council. Mr. O. C. Robson, Engineer, Public Offices, Dyne-road, Kilburn, N.W.:—

W. Hollingsworth	£463 0 0	Ballard, Ltd.	£392 0 0
T. Adams	419 0 0	W. Griffiths, 283, Kingsland-rd., N.*	372 17 8
Nowell & Robson	413 0 0		
E. Parry	399 10 0		

* Accepted.

LONDON.—For new villa residence, Duke's-avenue, Chiswick, W., for Mr. Walters. Mr. Percy B. Tubbs, architect, 68, Aldersgate-street, E.C.:—

T. W. Thomas	£1,452 0	S. Hunt	£1,695 0
F. Gough & Co.	1,220 0	C. Jeek Hornsey*	1,000 0
G. Hooper	1,150 0	T. Nicholls	1,010 0
W. Blackburn	1,116 0	J. Russell	986 18
O. J. Plumbridge	1,109 0		

* Accepted.

NORTHWICH.—Accepted for paving, kerbing, &c., Tabley-street and four other streets, for the Urban District Council. Mr. Brooke, Town Surveyor, 38, Wilton-street, Northwich:—

John-street—George Rathbone, Northwich	£65	0	0
Whalley-road.—George Rathbone, Northwich	295	0	0
Yorkshire-place.—George Rathbone, Northwich	125	0	0
Tabley-street.—S. Hutton, Peel Causeway, Altrincham	340	7	7
Wellington-street.—S. Hutton, Peel Causeway, Altrincham	197	19	6

PONDERS END.—For pulling down and rebuilding the "Falcon" Inn, South-street, Ponder's End, for Messrs. Hoare & Co., Limited. Messrs. Perry & Reed, architects, 9, John-street, Adelphi, W.C.:—

C. Symonds	£3,749	Perry & Co.	£3,524
Hall, Beddall & Co.	3,703	H. Knight & Son, Tottenham*	3,339
Clarke & Bracey	3,522		
Sparkes & Son	3,525		

* Accepted.

RETFORD (Notts.).—Accepted for taking out present and rebuilding new shop-front, for Mr. H. Burton, Jun. Messrs. Eyre & Southall, architects, Retford and Gainsboro':—

C. Jones	£155

RETFORD (Notts.).—For the erection of stables and warehouse, for Mr. F. Broadbery. Messrs. Eyre & Southall, architects, Retford and Gainsboro':—

T. Hopkinson	£313 0	G. Fenton	£298 18
F. Fenton	298 0	C. Jones*	325 0
G. Hurst	297 0		

* Accepted, with other additions.

SCARBOROUGH.—Accepted for additions, &c., to 22, Westborough, for Mr. W. Vasey. Mr. C. Edeson, architect, 25, Huntriss-row, Scarborough. Quantities by architect:—

Building.—I. W. Bland, Nelson-street	£348 10 0
Joinery.—G. Scales, Melrose-street	232 10 0
Plumbing and Glazing.—T. Craven & Son, 9 and 10, Newborough	69 0 0
Smithing and Foundry.—Appleby & Brogden, Sussex-street	77 4 11
Painting.—Postill & Kelly, 6, Valley Bridge-parade	14 10 0
Slating.—C. Pullan, 67, Rathbury-street	10 12 0

STANSTED (Essex).—For the construction of a brick reservoir and pumphouse, for the Water Company. Mr. Harold Warren, C.E., 2, St. Mary's-passage, Cambridge:—

William Bell & Sons	£634
J. L. Glasscock & Son	510
John Saint & Son	£502
Daniel Robinson, Junior, Stansted (accepted)	£440

TONYREFAIL (Wales).—For the erection of a schoolmaster's house, for the Llantrisant School Board. Mr. J. J. Evans, architect, Sunnyside, Pemarth. Quantities by architect:—

Enoch Bros.	£452 0
George & Lewis	449 0
J. Griffiths	429 0
J. Davies	£427 10
E. Jenkins & Sons, Tonyrefail (accepted)	405 0

TRANENT (N.B.).—For the execution of water-supply works, Pathhead, Ford, Dalkeith, for the Burgh Commissioner. Mr. R. Little, surveyor, 74, George-street, Edinburgh:—

Archibald Fraser	£1,256 4 9
Henderson & Duncan	1,136 2 0
James Young & Sons	1,111 2 9
William Johnstone	1,089 0 11
T. & S. Crawford	£1,081 6 11
D. Purvis & Co.	1,024 2 3
Geo. Mackay & Son	1,021 0 4
Laurence Kelly	1,014 5 6
J. M. Knight & Son	964 16 10

LONDON SCHOOL BOARD TENDERS.

At the last meeting of the London School Board, the following lists of tenders were submitted by the Works Committee:—

COTTENHAM-ROAD.—Heating:—

W. G. Cannon & Sons	£750
Ward & Nock	738
I. C. & J. S. Ellis, Ltd.	669
Fraser & Son	588
G. Davis	£540
I. W. Brooke	475
J. F. Clarke & Sons*	469

CREEK-ROAD.—Heating:—

G. Davis	£350 0
Maguire & Son	334 15
Z. D. Berry & Sons	320 0
J. Gray	320 0
J. C. & J. S. Ellis, Ltd.	£299 0
E. Oldroyd & Co., Ltd.	270 0
Wippell Bros. & Row	270 0
Chas. Seward & Co.*	263 0

GILLESPIE-ROAD.—Heating:—

Comyn Ching & Co.	£113 0
Teale & Somers	112 0
Voucher, Ltd.	79 0
Chas. Seward & Co.	71 0
Vaughan & Brown, Ltd.	£66 17
J. F. Clarke & Sons	66 0
W. Simmons	59 19
G. Davis*	55 0

PORTMAN-PLACE.—Heating:—

Turner & Co.	£495 0
Strode & Co.	493 0
Maguire & Son	£482 10
E. Oldroyd & Co., Ltd.*	370 0

* Recommended for acceptance.

TO CORRESPONDENTS.

J. A., J. G. (Below our limit).—T. B. (Amounts should have been stated).

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

LONDON.—For the erection of the first portion of the Essex-road Board Schools, Manor-park, E., for the Little Ilford School Board. Mr. S. Jackson, architect, 674, Romford-road, Manor-park,. Quantities by Messrs. Matthews & Laurance, 8, Delahay-street, Westminster, S.W.:—

	School Buildings.	Playgrounds.	Drainage.	Outbuildings.	Total.
	£ s. d.	£ s. d.	£ s.	£ s.	£
H. Rons	11,835 9 4	1,123 7 8	147 16	883 3	13,990
General Builders, Limited	11,400 0 0	1,135 0 0	264 0	1,025 0	13 824
Perry & Co.	11,182 0 0	956 0 0	185 0	898 0	13,201
H. J. Carter	11,124 0 0	845 0 0	190 0	815 0	12 974
Kirk & Randall	11,815 0 0	701 0 0	202 0	847 0	12,564
G. Sharpe	10 530 0 0	687 0 0	230 0	869 0	12,325
W. Shurmur	12,598 0 0	720 0 0	169 0	800 0	13,287
W. Watson	10,550 0 0	700 0 0	150 0	782 0	12 180
W. Gregar & Son, Stratford*	10,270 0 0	660 0 0	240 0	800 0	11,970

* Accepted subject to the approval of the Education Department.

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Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the Front Page should be in by TWELVE noon on WEDNESDAY.

SPECIAL.—ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before 10 a.m. on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

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FOR ALL THE PROVED KINDS OF BATH STONE.
FLUATE, for Hardening, Waterproofing, and Preserving Building Materials.

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DOULTING STONE.

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Chief Office:—Norton, Stoke-under-Ham, Somerset.
London Agent:—Mr. E. A. Williams, 16, Craven-street, Strand,

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SZERELMEY STONE LIQUID
Absolutely waterproofs and preserves Bricks, Stone, Cement, Stucco, Plaster, &c.
SZERELMEY & Co., Rotherhithe New-road, S.E.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [ADVT.

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